Michigan - Coastal Zone Management Program

LITTLE BAY DE NOC
MANAGEMENT PROGRAM

OCT 1980

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RECOMMENDED REPORT TO THE
DELTA COUNTY PLANNING COMMISSION

OCTOBER, 1980

Little Bay de Noc
Technical Advisory Committee

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The Little Bay de Noc Management Program represents a joint effort by the CUPPAD Regional Commission, the Delta County Planning Commission, and the Little Bay de Noc Technical Advisory Committee under funding provided by the Michigan Department of Natural Resources. This Report is divided by chapters as follows and is accompanied by the indicated maps.

ONE: PLANNING PROCESS

Introduction

There are few areas in the Great Lakes Region having the diversity and abundance of coastal resources to be found along Little Bay de Noc. The bay is an excellent natural port served by major rail lines and also provides some of the finest fish and wildlife habitats in the Upper Peninsula. The beaches, fishing areas, and sheltered bays provide a wide variety of recreational opportunities for residents and tourists. In addition to its natural beauty; industry, tourism, timber, and agricultural production constitute a daily diverse economic base providing for a year-round bay population of over 25,000. Delta County's population is presently estimated at about 41,900 and is further estimated to grow to about 48,700 by the year 2000. A large part of that increase will occur along the bay. The accumulated effects of and potential for growth, as well as the varied potential uses of its natural resources, pose a need for thoughtful consideration of the bay's future.

As indicated by the materials gathered by the Technical Advisory Committee, largely provided by Mr. Roy Jensen, private and intergovernmental planning for the bay has a long history. Some plans have been brought to fruition, others not. Coordinated development of an overall plan has been stymied, in part, by the diversity of governmental jurisdiction along the bay, which includes both state and federal ownership and management as well as the local jurisdiction of seven townships, two cities, and the County. Although there would appear to be agreement that the bay has great potential, there is certainly diversity of opinion as to what it has potential for.

The Little Bay de Noc Management Program is based on the premise that bringing the diverse private and governmental interests together to work from present plans and their own expertise toward an overall management program will:

1. Benefit all interests.
2. Lead to better understanding of the problems and opportunities facing the bay and their interdependence.
3. Result in a recommended program for future management/development of the bay's resources.

A final management program adopted as part of the County Comprehensive Plan will set the base for coordinated management actions and the development of specific objectives, including such projects as new boat launch and recreational facilities, cargo facilities, and water/wastewater projects. The management program will be used to make recommendations to local governments and will provide the analysis necessary to secure state and federal funding for specific projects.

Groups in the Planning Process

The Little Bay de Noc Management Program was initiated by the successful attempt of the CUPPAD Regional Commission to receive funds from the state's Coastal Management Program for a "comprehensive management strategy to coordinate existing plans and uses, (which) will result in goals, policies, and objectives to properly manage the coastal resources of Little Bay de Noc."

The CUPPAD Regional Commission is a voluntary organization created and directed by local governments and private groups within the six Counties of Alger, Delta, Dickinson, Marquette, Menominee, and Schoolcraft. Each county maintains a committee composed of local officials and private representatives who generally review all staff work pertaining to the county. The five officers of each county committee together form the Commission which provides overall direction. The Regional Commission maintains a professional staff of seventeen who work with local governments and planning commissions on a wide range of community management and planning activities. The Regional Commission is locally funded and receives state and federal funding under specific grants and designations. All local governments in Delta County and several private organizations are member groups of the Regional Commission. The Little Bay de Noc Management Program has been staffed by the staff attorney, a management analyst, and an environmental planner.

The Delta County Planning Commission is the one local planning commission with jurisdiction encompassing the entire bay. Created pursuant to Act 282 P.A. 1945, the County Planning Commission is charged to make studies, surveys, and plans for the economic, social, and physical development of the county and to work with interested agencies and groups in so doing. Following a report from Regional Commission staff on the potential program, the County Planning Commission determined at its monthly meeting in January that the management program would be done under its auspices and named a subcommittee to work on it. The subcommittee reported out a suggested list of representative experts to serve on a Technical Advisory Committee which was reviewed and approved by the Planning Commission and invitations were sent out. Planning Commissioners Joan Kitiuk, Chairperson of the Subcommittee, was named to chair the new combined Technical Advisory Committee (TAC). Under the proposed planning process, a draft final report developed by the TAC will be forwarded to the Planning Commission for its review and adoption as part of the Delta County Comprehensive Plan. Joint reviews with local governments are to occur at that time. The final management program will, of course, also stand on its own for use by all interested groups and provide a basis for securing state and federal funding for identified bay projects. Members of the Technical Advisory Committee are listed below.

Little Bay de Noc Technical Advisory Committee

Mr. Robert Anderson
Clairmont Transfer Company

Mr. Foy Arbour
Peninsula Industrial Sales

Mr. Joseph Bal
Michigan Dept. of Natural Resources

Mr. William Bullen
Michigan Dept. of Natural Resources

Mr. Patrick Curran
Delta County Planning Commission

Ms. Beverly Moberg
Delta Co. Building and Zoning

Mr. Don Pellegrini
MSU Extension Service

Mr. Robert Perron
Harnischfeger Corporation

Mr. James Richer
Ford River Township

Mr. Robert Schmeling
Delta County Historical Society

Mr. Doug Glevanic
U.S. Forest Service

Mr. Otto Green
Bay de Noc Community College

Mr. Lawrence Haack
Audabon Society

Mr. Joseph Heller
Delta County Planning Commission

Mr. Roy Jensen
Escanaba Port Authority

Ms. Joan Kitiuk
Delta County Planning Commission

Mr. William Lenberg
Chicago and Northwestern Railroad

The Honorable Dean Shipman
Delta County District Court Judge

Mr. Anthony Shomin
City of Escanaba Recreation Department

Mr. Roy Swanson
Delta County Chamber of Commerce

Mr. Wallace Thorsen
Bay de Noc Township

Mr. Harold Vanlerberghe
Delta County Board of Commissioners

Mr. Henry Von Blaskewicz
Gladstone Yacht Club

The Technical Advisory Committee was the "work group" on the project. It was designed to draw together representatives from all levels of government and private business to provide the expertise, examination, review, plans, and direction necessary for a realistic and truly useful end product. During the 6-7 month development of the management program, staff reported to and was directed by the TAC, whose work provided the central part of the overall study.

TWO: ISSUES AND OPPORTUNITIES

RECREATION

The parks, harbors, access sites, and urban facilities along the 85 miles of the bay provide a wide range of recreational outlets for bay and area residents and for tourists. The established transportation network further assures that travellers will be exposed to Little Bay de Noc facilities and accommodations, though their ultimate destination may lay elsewhere. A 1977 estimate by the Michigan Travel Bureau pegs tourist expenditures at 26.5 million dollars annually in Delta County, accounting for over 6% of the county's total employment. Though a large part of that expenditure relates to Big Bay de Noc (Fayette State Park) and a part to out-county attractions, the greater proportion is likely spent along Little Bay de Noc.

The increasingly higher price of gasoline is and will continue to restrict the mobility of both area residents and tourists. This has led to an increasing local interest in more intensive use of bay recreational facilities. Though the increasing cost of travel is expected to have substantial impact on tourism, it may also lead to a tourist trend beneficial to the bay if realized. As indicated at a 1979 Michigan Planning Association seminar, tourists will be more likely to travel to a particular area and stay during their vacation as opposed to the "travel through" vacation more prevalent in the past. Thus, provision of accommodations and attractions for a longer stay along the bay may ameliorate, to some extent, the expected tourist loss.

As indicated in the 1974 Delta County Comprehensive Plan, recreational facilities have not been provided in a systematic or coordinated fashion. Thus, provision of facilities within an individual community has been dependent upon the presence and success of that community's interest groups and upon a rather ad hoc funding process. This has often led to perceived deficiencies in more expensive facilities (i.e., ice rinks or swimming pools) and to inadequate distribution of facilities such as along the Stonington Peninsula. Many facilities have also deteriorated over the years. Recent interest has generally focused on improving and expanding public access sites, yacht harbor improvements, and the promotion of public events and water sports.

The Bay de Noc Management Program has led to a more comprehensive, coordinated approach to recreation through a three stage process:

1. Inventory of existing facilities, their condition, and present plans for them.
2. Consideration of future needs and the appropriate priority of recommended projects.
3. Recommendations regarding the appropriate sites for any new facilities based on access, soils, and environmental considerations and use of the bay atlas.

The following is an inventory of present facilities and sites and the needs expressed in individual community plans. Critical to evaluation of opportunities based on this review will be the expected cutbacks in state and federal funding of state and federal sites. The capital improvements program will proceed with this new development in mind.

Recreation Facilities in General

Little Bay de Noc has seven public boat launching ramps. Four of the seven that are presently considered in good, servicable condition include the ramp at the Ford River access site, two ramps in the City of Gladstone, and the ramp at the mouth of the Whitefish River. The three ramps not considered in good condition include the two ramps at Ludington Park in Escanaba and the ramp at Twin Springs Park on the Stonington Peninsula. The Escanaba ramps may be improved within the new capital improvements program for the park.

The Gladstone and Escanaba yacht harbors provide facilities for larger pleasure craft. For well over 50 years, the City of Escanaba has maintained a pleasure craft marina located in Ludington Park. The marina presently berths 40 vessels, operates a storage yard, and maintains 13 transient spaces. Privately maintained bouys for approximately 20 sailing vessels exist offshore with space available for about 100. The yacht harbor in Gladstone has 8 seasonal docking facilities, 4 transient spaces, and bouys for about 8 sailing vessels.

Swimming areas are provided in Ford River Township (Fuller Park), City of Escanaba (Ludington Park), and Gladstone (Van Cleve Park).

Twin Springs Park (10 acres) has a picnic area and parking to go along with a small beach. Fuller Park (40 acres) has 50 parking places, picnic area, swing and play apparatus, softball field, multi-purpose area, and 1,000 feet of swimming beach. Ludington Park (120 acres) has a swimming beach, bathhouse, playground equipment, stationary raft, diving board, picnic tables, picnic stoves, band shell with seating for 400 persons, 4 lighted tennis courts, restrooms, paved basketball court, picnic pavilion, fenced tot lot, ball playing field, and soccer field. Van Cleve Park (62 acres) has a picnic area (30 tables), playground equipment, tot lot, multi-purpose open field, swimming beach, and beachhouse.

Other recreation areas of significant importance to the Little Bay de Noc area are the Pioneer Trail Park, Wilderness Park, City Park (Gladstone), and Peninsula Point. Generally described as an open space (5 acres), Peninsula Point (Bay de Noc Township) has an old lighthouse, a 10 car parking area, and small picnic area. Pioneer Trail Park (Wells Township) consists of 98 acres, 100 picnic tables, a shelter, a dance pavilion, swings, etc., softball field, horseshoe pits, open field, 56 campsites, and 2,600 feet of waterfront area. Wilderness Park (Gladstone) has 50 camping sites, 50 parking places, campground equipment, waterfrontage, and consists of about 50 acres. City Park (Gladstone) is made up of 23 acres, 10 picnic acres, a shelter, softball field, a multi-purpose open field, and adjoins the Van Cleve site with continuous water frontage.

Ford River Township

In Ford River Township there has been a need for park improvements and a boat launching facility in Fuller Park, a county-owned facility. In addition, general maintenance and clean-up problems have been observed at Ford River access site, No-See-Um Creek, Fuller Park, and Portage Marsh access, all of which are state-owned and maintained sites. Local residents, through representatives on the Technical Advisory Committee, have indicated that the beauty, accessibility, and, therefore, enjoyment of the parks has been

substantially impaired by the poor maintenance of roads into the parks and poor garbage pickup, particularly at Fuller Park. The county, as a result of these concerns, has indicated through its representative that maintenance will be stepped up. Maintenance of present parks is seen as a higher priority than construction of new facilities. A boat launch site at Fuller Park should still be constructed, but is viewed as having lower priority to improvements at the Ford River site.

City of Escanaba

The City of Escanaba's marina has in recent years seen the demand for seasonal dock space increase with the present docking facilities deteriorating rapidly. Since 1964, the beach front has been eroding at a rate of 7 feet per year and has caused severe damage to support facilities in the area. The cement walkway along the beach has been undermined by lake waves and has generally collapsed. The walkway is fenced off. Other bathing beach areas are similarly threatened. The two boat launching facilities are also considered in deteriorated condition.

Presently, Escanaba is seeking Coastal Management Program funds through the DNR to help defray the cost of two new marina projects. One is a proposed small boat launch facility that will be located on Sand Island. The DNR Waterways and DNR Recreation Services (LAWCON) have committed partial funding of the project. The small boat launch will close the gap on a much needed facility for small recreational boaters. Once this facility is completed, the two other sites will be abandoned.

The other DNR funded project is the creation of a parksite and greenspace on Ludington Park's Sand Island. This project will allow greater coastal access for the residents of the area plus control and stabilize a highly volatile erosion prone area. Coastal Management is currently funding an engineering design and will eventually become involved in the actual development of the site.

The completion of these projects are vital in improving the access to Little Bay de Noc. In the near future, construction of 150 finger piers and service dock, an addition to the service building, and repairs to the north dock facing are contemplated. Such major construction is necessary to upgrade deteriorating conditions and meet the immediate demands placed upon the facility. A travel lift would also be useful in boat/storage handling because it would increase capacity for storage and make the harbor more of an economical operation. This facility would be the only one of its type in the area, with the next nearest site located in Marquette. The present marine rail system is a limiting factor in harbor redevelopment because of its inefficient design.

Other recreation facilities in the park are in poor condition, as indicated by the need to resurface the tennis courts in Ludington Park. The park is also in need of new restroom facilities to replace those built in the 1940's, which are inadequate according to the city. General improvements to existing facilities are, therefore, needed to keep its usefulness and attractiveness at a high standard.

Wells Township

In Wells Township the lack of a public access site between Gladstone and Escanaba has been an issue for some time. The mouth of the Escanaba River has been indicated as an ideal site. At present, a lease for the industrially owned lands at the proposed site is now being negotiated. The project has a long-term lease arrangement with the DNR for the site. This proposed location is protected from the bay and would improve overall boating access to a very popular area. A boat launch site has been included as part of the Little Bay de Noc Capital Improvements Program appearing in this report.

Delta County's Pioneer Trail Park has been heavily used since its inception. Users include both resident day users and transient visitors to the area. The proximity of the park to the Escanaba River and the urban area in general ensure its continued utility. The County decided in the recent past to upgrade aging equipment and facilities and rearrange access to and from US-2 & 41. Other improvements planned include new and resurfaced roadways, year-round hiking/ski paths, rehabilitation of the Pioneer cemetery, and installation of new shower/restrooms and picnic facilities. A land use plan is being prepared with the work to be done via county funds, volunteers, and private donations. There are approximately 50 campsites in the park at present and an expansion of 2-3 sites per year is planned over the next five years with approximately 30 acres for day and passive uses.

Some formal access agreement would be advisable north of American Timber Homes for winter access. Trespass, erosion, and increased traffic in the area are presently causing a safety and traffic hazard in the Bay View area.

City of Gladstone

In the City of Gladstone, indications by its 1976 plan suggest improvements to Van Cleve and Wilderness Parks, construction of a fishing pier, upgrading the yacht harbor, and additional park development. The City of Gladstone Recreation Plan has indicated that a new park site should be developed east of the industrial park on the north side of town. The fact that major improvements should be made at the existing parks to the south, which have over one mile of waterfront area, this northern property may be left for other uses. Some opponents to this northern park development believe the site would duplicate existing facilities and that a new park at this site could not provide a good beach area without extensive renovation. Again, the Technical Advisory Committee recommendation is that improvements be made to present facilities.

The Delta County Comprehensive Plan proposed that consideration be given to expansion of shoreline day-use facilities. The City of Gladstone should, according to that plan, consider a phase change to eliminate the Wilderness Park and concentrate on day-use facilities. This type of action would eliminate one-third of the camping facilities along the Little Bay de Noc area. This would leave only 50 campsites at Vagabond Campground (private) on County Road 513 just three miles south of US-2 and 56 sites at the Pioneer Trail Park (Delta County). Day-use facilities could be provided along with camping in the Wilderness Park area. The elimination of the camping sites would put a strain on the other areas.

The City submitted a Coastal Management Project for Van Cleve Park for pathways. The project includes 1,100 feet of pathways for pedestrians and bicycle use within the park. The project will complete a walkway throughout the entire park. Recent citizen polls have shown that Van Cleve Park/Beach should get most public funds. The beachhouse is old and should be considered for renovation or replacement.

The Gladstone Recreation Plan indicated a need for additional slips, pilings, general docking space, and extensive dredging of the basin. However, a recent survey indicated that the majority of people responding did not support improvements and/or expansion to the yacht harbor. They did indicate a need for public restrooms at the yacht harbot, also cleaner shoreline and beaches.

Brampton Township

In Brampton Township a winter access road to Little Bay de Noc and streambank stabilization plan at Days River is being developed by the DNR, who has requested and received renewed funding to complete both of these projects. The projects are designed to make winter fishing access or smelt dipping easier and cause less environmental damage. Since the area is heavily used during the smelting season, more disposal containers in the area may help clean up problems. Additional public access sites for winter and summer may be needed if the general public is not allowed to continue use of some of the existing privately owned sites.

Masonville Township

The Whitefish River Public Access Site in Masonville Township is state-owned, consists of about 20 acres. Parking for 40 cars and trailers, and restrooms, are available. The general area is considered a wildfowl area. The area has had heavy fishing offshore in the public access location. Permanent offshore fishing area is expected to be built in the near future to replace the metal pier which was destroyed by ice. This improvement should increase the use of the area as suggested when it was designated as an "Area of Particular Concern" under the State's Coastal Management Program.

Presently, Masonville Township is in the process of improving their recreation facilities. The Masonville Township recreation area (formerly called the Rapid River Ball Park) consists of one ball diamond, 30 parking places, and a capacity for 200 people on a two acre parcel of land. The first phase of their capital improvements program for this recreation area will consist of the acquisition of a 24.5 acre parcel of land ajoining the present area, the placement of dugouts and fencing in the ballfield, and the construction of two restrooms.

The future recreational development schedule for the Masonville Township recreation area will include a tot lot, playground equipment, picnic area, horseshoe courts, and picnic pavilion. These activities are expected to occur during the next five years.

Ensign Township

The land that is now Twin Springs Park was originally owned by Ensign Township and the Escanaba and Lake Superior Railroad Company. The United States Forest

Service (USFS) was expected to maintain and improve the area after the transfer to the USFS in 1960. The township would like to see this park developed further for recreational purposes and has indicated that it would like the property deeded back if no improvements are planned. The USFS considers the area as undeveloped recreation. If a small boat access site was provided at Twin Springs and improvements to the existing facilities took place, residents and visitors would not have to go to Rapid River to launch a boat. In addition, that development would provide additional access to the bay from the eastern shore. Potential improvement to the Twin Springs Park is listed as one of the projects in the Capital Improvements Program.

Bay de Noc Township

The lack of a public boat launch on the Little Bay de Noc side of the Stonington Peninsula has interested Bay de Noc Township residents in obtaining such a facility. Possible sites include the "Farmers Dock" location and Maywood Shores. This would provide access to the Bay for the residents in the Stonington area and provide refuge for small boats if stranded by poor weather. The bay is narrow enough around Escanaba for boats to reach the Stonington Peninsula. After discussion, this project has been included as a project in the Capital Improvements Program.

The limited availability of rustic camping on or near Little Bay de Noc may raise an opportunity to further development of Peninsula Point. The USFS should consider providing an improved access road to the point and lighthouse, and attempt to preserve the natural surrounding of the site including the lighthouse.

Summary

It is extremely difficult and somewhat nonproductive for a unit of government to consider its recreational system separately from that of the surrounding areas and the county as a whole. Local residents utilize recreation facilities and opportunities of all governments with little concern for corporate boundaries. Therefore, the management program should develop a play for coordinating the activities of the various organizations connected with the development and promotion of recreation. This could include DNR, USFS, National Park Service, Chambers of Commerce, planning commissions, local governing bodies, etc.

Since these facilities are, in most cases, located in a coastal area, many projects will be eligible under both the Land and Water Conservation Fund (LAWCON) and the Coastal Zone Management Program. LAWCON provides a 50 percent grant match of local funds, Coastal Zone has a 80 percent grant match program. In some cases, either through the project being ineligible or the scarcity of funds, important projects may have to be conducted through strictly local funds. Utilization of these funds becomes more possible when a coordinated project serving a general area is proposed. The Little Bay de Noc Management Program may provide the vehicle for such project proposals. It is further recommended that the County Planning Commission continue to coordinate efforts in this regard.

HISTORICAL

In recent years, there has been an increased interest in the preservation of the heritage that earlier generations have given America. Historical preservation has received a big boost from the bicentennial celebrations, but the search for roots in our young, mobile nation probably goes deeper than this recent upsurge of interest might seem to indicate. There is now, perhaps, more concern and appreciation for the achievements and objects of quality that have come down to us, essentially as an unasked gift.

But not only does preservation of these reminders of the past provide a sense of worth and significance to modern endeavors, the preservation of older structures can lend a variety and character to the human scene that cannot be manufactured. They contrast with and bring to a human level the newer buildings that rise, new and crisp, around them. And older buildings can retain their appeal and meaning while taking on new uses, perhaps providing a new business with an inexpensive first home, or an old business with an impressive, comfortable "establishment".

Structures and sites of significance that are worth the effort of preservation, repair, or restoration usually require some effort to identify and research their part. The Historic Preservation Act of 1966 specifies that all states should identify, document, preserve, and interpret "districts, sites, buildings, structures, and objects of significance in American history, architecture, archaeology, and culture". Surveys are, therefore, crucial in the process that will lead to the preservation of Michigan's heritage.

The Delta County Historical Society has recognized the need to preserve our culture. They conducted a historical site inventory of the county in 1969 and played a role in placing sites such as the Peninsula Point Lighthouse on the National Historical Register. In addition, several publications have been put together surveying industrial, engineering, and architectural sites of historical importance.

The Little Bay de Noc area has about thirty sites with historical character. The sites included about seventeen buildings, ten historical markers, a limestone fertilizer quarry, a cemetery, and a sunken freighter. A map and index for the location of these historical sites can be found on pages 11a through 11d.

Surveys are important but historical sites cannot be assured a place in the future just because of their historical character. Placing these sites on the State Historical Register, National Historical Register, or both is the key to historical recognition which in turn supports its preservation. Of the 30 historical sites around the bay, only four have been recognized by the Federal Government or the State of Michigan. They are the Peninsula Point Lighthouse, the Smith Brothers Mill, and the informational markers for Little Bay de Noc and Bay the Noc - Grand Island Trail. Some sights that should be considered for placement on a historical register are the House of Ludington, Delta County Historical Museum, Cleveland Cliffs Iron Co. Charcoal Plant, Sand Point Lighthouse, and the C&NW Railroad Roundhouse.

If a particular site is placed on the National Historical Register, many opportunities arise. Grants and low interest loans become available for their purchase and restoration. Historic Preservation Grants may be used for surveys

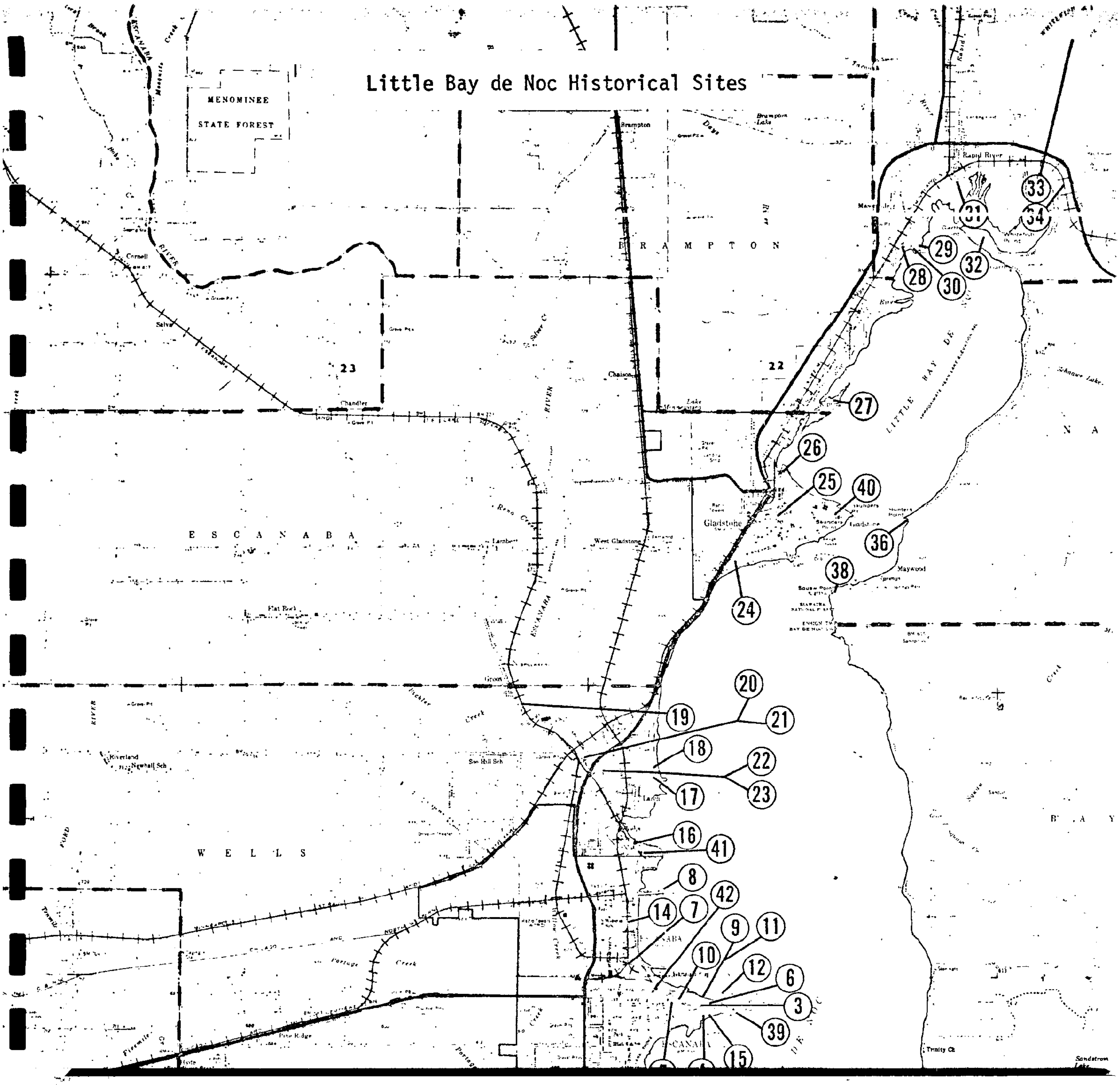
INVENTORY OF HISTORIC AREAS

Map No.	Name of Identity of Area	Location		Description of Area
1	Ford River Lumber Company	Community of Ford River	M-35	Old sawmill at mouth of Ford River. No evidence remains.
2	Early Stage Coach Station	Community of Ford River	M-35	No evidence remains. Station used primarily to change horses.
3	Little Bay de Noc	City of Escanaba	Ludington Park	MHC State Site No. 147. A general history of Little Bay de Noc.
4	Monument to veterans of Civil, Spanish-American War and World War I	City of Escanaba	Ludington Park	Granite monument placed by D.A.R.
5	Site of first school in Escanaba	City of Escanaba	7th St. South & 1st Ave. So.	D.A.R. plaque on lawn of Carnegie Library.
6	Delta County Historical Museum	City of Escanaba	Ludington Park	Houses artifacts and historical papers.
7	Chicago Northwestern Railroad Co.	City of Escanaba	M-35 US-2&41	Railroad associated with early development of Escanaba.
8	Iron Ore Loading Docks	City of Escanaba	North Lake Shore	A sequence of chute type docks, replaced by conveyor in 1969.
9	Iron Ore Centennial Monument	City of Escanaba	Municipal Dock Lawn	Inscribed monument commemorating 100 years as an ore port.
10	Shingle Mill	City of Escanaba	East Ludington Street	One of earliest wood using industries in Delta County.
11	Escanaba Centennial Monument	City of Escanaba	Municipal Dock Lawn	Escanaba 100 years old - 1863-1963.
12	Burning of Freighter Nahant	City of Escanaba	Little Bay de Noc	At Ore Dock No. 4, November 9, 1897.
13	Cochrane Roller Mills	City of Escanaba	North Side	At attempt to establish a steel mill in the Upper Peninsula - short lived. Specific location unknown.

Map No.	Name or Identity of Area	Location		Description of Area
14	Oliver Iron Mining Company	City of Escanaba	North Side	Ore Crusher - preparing ore for boat loading.
15	House of Ludington	City of Escanaba	Ludington St.	Part of structure dates to early Escanaba.
16	I. Stephenson Co.	Community of Wells	Co. Rd. 426	Largest sawmill in its time - pine and hardwood.
17	Mashek Chemical Co.	Community of Wells	Co. Rd. 517	Remnants of buildings that once produced charcoal for the iron ore industry.
18	Michigan Tanning & Extract Co.	Wells Twp.	Co. Rd. 517	Remnant buildings of old tanning industry (Hemlock bark)
19	Billings-Richards Sawmill	Wells Twp.	Co. Rd. 426	First sawmill in Delta County - scant evidence remains.
20	Smith Brothers Sawmill	Wells Twp.	Co. Rd. C-45	Site of second oldest sawmill in Delta County (Now Mead's No. 1 Dam).
21	Early Lumbermen in Delta County	Wells Twp.	US-2 & 41	MHC Local Site No. 63 erected in 1967.
22	Cemetery of Early Settlers	Wells Twp.	US-2 & 41	In Pioneer Trail Park.
23	Early Missionary Trail	Wells Twp.	US-2 & 41	Pioneer Trail Park dedicated to this trail. Lewis Cass Chapter of DAR in 1934 placed plaque on boulder here.
24	Indian Gardens	City of Gladstone	US-2 & 41	Gardens noted on early survey maps. No evidence remains.
25	Marble Arms Company	City of Gladstone	US-2 & 41	Early Gladstone industry.
26	Northwestern Cooperage Co.	City of Gladstone	US-2 & 41	Remnant buildings remain. Now an industrial park.
27	Cleveland Cliffs Iron Co. Charcoal Plant	Community of Kipling	US-2 & 41	Building remnants of old charcoal industry.
28	Masonville (Gena)	Community of Masonville	US-2 & 41	Site of first county seat. Site of Mason Sawmill.

Map No.	Name or Identity of Area	Location		Description of Area
29	Stack Lumber Company Mill	Community of Masonville	US-2 & 41	Remnant buildings of old sawmill industry.
30	Bonz Mfg. Company	Community of Masonville	US-2 & 41	Remnant buildings of old sawmill and woodenware plant.
31	Stone Anderson Sawmill	Community of Rapid River	US-2 & 41	Mill dates back to early Rapid River - Remnants of mill site still exist.
32	Sawmill at Garth Point	Masonville Township	On Bay de Noc	Old town site and cemetery - Peacock Sawmill.
33	Clark Sawmill	Masonville Township	US-2 Whitefish River	Remnants of 3rd oldest sawmill in Delta County Louis A. Roberts Homestead.
34	Indian Portage - Little Bay de Noc to Grand Island	Masonville Township	Co. Rd. 509	Trails led from Bay de Noc to Grand Island; also to Ogontz Bay. MHC State Site No. 281.
35	Limestone Fertilizer Quarry	Bay de Noc Township	Co. Rd. 513	Along Stonington shore.
36	Sawmill	Ensign Township	Co. Rd. 513	Located near Twin Springs Park.
37	Peninsula Point Lighthouse	Bay de Noc Township	Co. Rd. 513	Now abandoned USGS Lighthouse. Indian Cemtery in area.
38	Squaw Point Lighthouse	Ensign Township	Co. Rd. 513	Now automatically manned lighthouse.
39	Sand Point Lighthouse	City of Escanaba	Ludington Park	Now USCG Light Station - built about 1868.
40	Soo Line Railroad	City of Gladstone	Traverses Delta County	At one time an important terminal for ore, grain and commerce with lake vessels.
41	Escanaba River Company	Community of Wells	Co. Rd. 426	The present Escanaba & Lake Superior Railroad Company.
42	Chicago and Northwestern Railroad Roundhouse	City of Escanaba	8th St. & 1st Ave. North	Presently used to house train engines. Built around 1880.

Little Bay de Noc Historical Sites



of the state for historic properties, preparation of historic preservation plans, preparation of nominations to the National Register, and acquisition and preservation of properties listed in the Register. At the discretion of the Secretary of the Interior, grants for up to 70 percent of costs for survey and planning may be made. Fifty percent grants can be obtained for survey, planning, acquisition, and development projects.

The Endangered Properties Fund, administered by the National Trust for Historic Preservation, is a one million dollar fund used to preserve districts, buildings, sites, structures, and objects that are national historic landmarks or that possess an equivalent level of national significance and are faced with serious threats.

If a historical site is placed on a historic register, the site will be restricted to the current use only if federal money is used on the site. In addition, monies are not always available for purchase and renovation.

Mapping of historic sites on Little Bay de Noc has been done as part of the study. Some of these sites should be recommended for inclusion on the state and federal registers.

ENVIRONMENT

Critical to any proposed development along the bay, be it a cargo facility or a new recreation facility, will be the surrounding environmental considerations and present land use regulations. Proposals emerging from the management program will include consideration of environmental factors and recommendations for regulatory improvements and changes.

MUNICIPAL WASTEWATER FACILITIES

Rapid River (Masonville Township):

Wastewater disposal is provided by means of individual on-site septic systems. However, due to the shallow depth of soil to bedrock, these on-site subsurface disposal systems are not functioning effectively, primarily within the community of Rapid River. As a result, improperly treated septic tank effluent finds its way through the rock openings to Rapid River and Little Bay de Noc. In addition, several business and private households discharge sewage directly to the river via a state highway storm drain.

The community of Rapid River recognizes the seriousness of its problem and has taken steps to relieve the situation. To date, the township has completed the first draft of its municipal wastewater facilities plan. The plan calls for a wastewater system serving the community of Rapid River.

City of Escanaba:

The entire City of Escanaba is served by a wastewater treatment facility which underwent major modernization in 1974 and now provides advanced secondary treatment (including phosphate removal) which is well within the state's effluent requirements. However, portions of the collection system are not capable of handling the wasteload, particularly during the Spring when high ground water is common. Consequently, collection system bypasses have been

necessary periodically resulting in discharges of raw waste into the bay. The city has initiated a wastewater facilities plan to develop a cost-effective solution to these deficiencies.

Wells Township:

Problems with on-site septic systems in Wells Township has resulted in a need to obtain funding for a facilities plan. The plan would determine the most cost-effective way to solve their problems.

City of Gladstone:

The city is served by a wastewater treatment facility which is operating well within the effluent limits set by the State of Michigan. However, due to the age of the collection system, there is an excessive amount of infiltration/inflow, particularly during periods of high ground water. As a result, the treatment plant is overloaded and incapable of treating the waste properly. Efforts are now underway by the city to alleviate this problem. To date, they have initiated wastewater facilities planning to determine the most cost-effective solution. A new site may be needed if considerable growth on the bluff occurs.

MUNICIPAL WATER SUPPLY SYSTEMS

Escanaba City and Wells Township:

Present Conditions

The City of Escanaba, with a population of about 15,502, is served by a recently improved water supply facility obtaining water from Lake Michigan (Little Bay de Noc). The water filtration plant has a capacity of 8 million gallons per day (MGD), fully adequate for projected needs. System storage consists of one million gallon at plant ground level storage and two one-half million gallon elevated storage tanks. A deep well drawing water from the Munising Sandstone on the west side of town is used at all times as a supplementary supply.

In 1976, the City of Escanaba completed construction of new treatment, transmission, and storage facilities. The improvements included plant expansion, distribution system additions, and a new 500,000 gallon elevated storage tank. The plant upgrading included a new carbon storage and high service pumping facility and extensive renovation of all treatment facilities. Additions to the distribution system saw the installation of a new large diameter water main which will insure proper pressure and an adequate supply of treated water for use in homes and industry, in addition to increased flows for fire fighting purposes. A new elevated storage tank, erected on the north city limits, provides 500,000 gallons of added storage capacity.

In Wells Township water is obtained through individual wells. There is suspected ground and surface water contamination in the township, due to increased population densities and significant growth, particularly in the unincorporated village of Wells. The village has septic system difficulties in low lying areas because of high water tables and organic soils. The Delta-Menominee District Health Department has stated that they are aware of the situation and are correcting individual cases of septic failures as they occur. Municipal water and/or wastewater service by the City of Escanaba could alleviate the potential health hazards associated with these conditions.

Needs

The water intake system for the Escanaba water plant is old and undersized, limiting the ability of the water plant to draw water. The intake was built in the 1930's and contains wooden portions. The intake is presently large enough to meet current demands. The intake system is not able to meet the water plant's 8 MGD designed capacity. The intakes present condition leaves open the possibility of structural failure and a resultant water loss to the system.

Another problem associated with the water intake system is the lack of emergency power. If a power failure occurs, no backup power is available to pump water from Little Bay de Noc into the plant. The remainder of the system would function under existing emergency power but only until the water within the system was depleted.

Wastewater discharge control is needed at the water filtration plant. The sludge generated at the plant is being discharged into Little Bay de Noc, causing a pollution problem.

The City planned such improvements as a part of the recent expansion program but deleted them because of insufficient funds. Presently, the City has a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of sludge from the water treatment works. Because of the magnitude of expenses associated with facilities for such control, work has not been initiated.

In portions of Wells Township, increased population densities and natural limitations have resulted in suspected ground water contamination from failing septic systems. The most cost-effective way to remedy these problems with regard to an adequate and safe water supply would be through a municipal water system. Since the City's water system serves areas bordering the Township, it may be advantageous to expand the City's water system into the Township.

Gladstone City - Brampton-Escanaba Townships

Present Conditions

The City of Gladstone, with a population of about 5,200, is located in central Delta County on the west shore of Little Bay de Noc. The City of Gladstone operates a 3.0 MGD water sedimentation and filtration plant. The plant was constructed in the 1970's and is presently treating 500,000 gallons per day. Once the water from Lake Michigan (Little Bay de Noc) is treated, it is stored in two ground level reservoirs, a 500,000 gallon tank at the filtration plant, and an older one million gallon tank on the bluff west of town.

Outside of the City of Gladstone, drinking water in Escanaba and Brampton Townships is provided by individual wells. Portions of these townships have experienced significant development because of their close proximity to the City of Gladstone. One such area in Brampton Township is the unincorporated community of Kipling.

Needs

The water intake system was constructed in 1889 and is made of wood staves and metal banded. The diameter is 24 inches. The inshore portion was replaced with steel pipe in 1923. The crib and pipe was last inspected in 1957 and found to be in good condition.

Since the present condition of the water intake system is unknown, it should be inspected and an alternate intake investigated. The cooling water intake for the City's power generating plant could serve as an alternative intake for the water system. The cooling water intake for the power plant is 42 inches in diameter. One of the reasons for using this intake is that the water quality varies from water plant intake to power plant intake and at times it would be beneficial to treat the one with the best water quality. In addition, it would provide the water plant with a backup system.

An alternative water transmission main to the bluff storage reservoir is also needed. Presently, only one main extends from the plant to the reservoir and if that water line failed, the bluff storage reservoir could supply water to the City for about 2 to 3 days. If the water main from the distribution system to the bluff reservoir fails, the water plant, along with the on-site storage, could supply the City with water. Since the condition of the water line from the distribution system to the bluff is unknown, and the fact that the Soo Line Rail Yard is located above this water line, an additional water line supplying the bluff storage area would help insure a continuous supply of water to the City. A second water line from the water treatment plant to the distribution system would also improve the supply capabilities of the system.

The original construction of Gladstone's water system included many undersized and dead end water lines. Dead end lines are undesirable because if a water main breaks, service will be disrupted between the break and the end of the line. With looped lines, water can come from both directions and service can be continuous. Looped lines also reduce fluctuations in water pressure, providing better service. Undersized mains of the 2 to 4 inch variety are inconvenient in times of peak use when water pressure is inadequate. Secondly, they cannot provide adequate fire protection because the lines are not large enough to warrant fire hydrant hook-ups. The City does have a long-range program of looping and upgrading these deficient areas to improve local water pressure.

The community has nearly completed developing the portion of the City fronting on Little Bay de Noc. Construction of a new industrial park on the bluff is being planned. In 1974, water service was extended to the north bluff area. However, to promote residential and industrial growth in the bluff area, an adequate water supply will be needed. The City has ample water treatment facilities to supply the bluff area with water but water storage and a distribution system extension is necessary.

At the end of 1977, 39 percent of the water leaving the plant was not charged to a customer. Losses were due to maintenance uses, main breaks, fire hydrant losses, and the like. The City, therefore, was not collecting money for 39 percent of the water treated for human and household consumption. Normal losses for an old system is about 25 percent. Some of the loss has been attributed to water meter inaccuracy. Water may not be properly metered if:

1) the customer demand was more than 20 gallons per minute or 2) if pressure drops too low along the service line.

Gladstone conducted a study of water loss problems in 1978 and undertook a program of remedial action. In 1979, a 6 percent reduction in the amount of lost water was observed. The City decided to continue its program and has employed four persons through the CETA program to investigate water leaks through soundings. The City is also continually testing meters for proper working order and upgrading problem water lines.

In portions of Brampton and Escanaba Townships, increased population densities and natural constraints pose an increasing danger of ground water contamination due to failing septic systems. Since the City of Gladstone operates a water supply system near these townships, it may be cost-effective to remedy these problems by extending the City's water service to these areas rather than constructing independent water systems. If investigation shows that construction of a water system will be impractical, individual corrections must take place.

Ford River Township - Ford River

Present Conditions

Ford River Township operates a water system serving the unincorporated community of Ford River. This water system was inherited from the founding lumber company in the early 1940's. The original system included a rock well yielding less than 40 GPM and a 3,000 gallon hydropneumatic tank. When the Township took it over, the distribution system consisted of small diameter (mostly 2") pipe. This has been replaced with 6" pipe as money became available.

In 1973, Ford River undertook a major waterworks improvement program, including a new well, a 50,000 gallon elevated storage tank, and the installation of 6" mains to replace most of the remaining 2" lines.

In 1976, Ford River Township submitted an application to the Farmer's Home Administration for a $104,000 combined federal grant and loan. The project scope was to improve well number one, which produced only 40 gallons per minute (GPM), with a new submersible well pump, controls and instrumentation, updating the electrical system at the well site and modifying the existing piping. These actions were designed to increase the systems reliability. The project also included the installation of approximately 3,350 linear feet of six inch water main with the appropriate number of fire hydrants.

Pipe installation was started in late Fall of 1977 and completed in early spring of 1978. However, the Farmer's Home Administration provided only $88,000 in combined grant and loan financing. The $16,000 decrease necessitated deletion of some controls and instrumentation at the number one well site. Consequently, the number one well was of no use to the Township.

In the Fall of 1978, Ford River Township applied and received a grant for $12,000 from the Farmer's Home Administration which enabled the Township to use the number one well as a back-up source of water.

The present system serves about 525 people within Ford River Township. It consists of two ground water wells, the number one well produces 50 GPM and

the number two well produces 200 GPM. These wells have independent electric power supplies for reliability purposes. The system contains a 50,000 gallon elevated storage tank and a distribution system consisting primarily of 6-inch piping. The elevated tank maintains system pressure and provides a modest reserve for firefighting.

Needs

Since Ford River Township's water system has recently completed major improvements, the system has no significant needs at present. Any long-range additions to the system should include extensions of water mains westerly along Township Road A-29 and northerly along Highway M-35. If development between Ford River and Escanaba increases significantly, it may become feasible to connect both systems. This would provide Ford River with a standby supply of water in case of well failure or a serious fire.

Masonville Township - Rapid River

Present Conditions

The unincorporated community of Rapid River, with a population of about 485, obtains their water through individual wells. It has several small industries, including a cheese factory and a lumber mill. Tourism is a major source of income for the town. Wastewater treatment is provided through septic systems that do not function effectively due to the shallow soil. Water is generally obtained from artesian wells 300 feet deep which tap the Trenton-Black River Limestone and the Au Train formation (part of the Cambrian-Ordovician sandy dolomites). Even though wells in the area are generally quite deep, the characteristics of the bedrock with its solutional openings may allow the contamination of the aquifer.

Needs

Good drinking water can be found within the area, but only at substantial depths. This water requires a large expenditure to obtain it. Many wells are improperly constructed which may allow contaminated surface water to reach the aquifer. It may be practical to provide Rapid River with a municipal water system to insure a good supply of water than through individual wells. If this proves impractical, well problems will continue to be met by the individual as they occur.

EROSION - LAKE LEVELS - FLOODING

Shoreline erosion and lake levels will be treated together because of the significant dependence of erosion rates on lake levels.

Shoreland erosion is a natural and ongoing process. However, the resultant damage to buildings and/or loss of property have made this a major problem along the bay. As stated before, the erosion process is continuous, but the rate of erosion fluctuates so that at times it does not seem to be a problem and during other times it is a major concern. Shoreland erosion becomes critical when high lake levels submerge beaches, and thus permit wave acton to work directly on highly erodible uplands. The levels of the Great Lakes have been monitored since 1860. Studies of lake levels during this time span have

not resulted in any method of predicting future lake levels. From examining lake level charts, it can be seen that the interval between periods of high and low water can vary widely. The range of lake levels has varied 6.6 feet on Lake Michigan.

Recent high water levels in Lake Michigan have caused increased shoreline erosion. Such erosion adds sediment, organic matter, and associated nutrients to the waters of Lake Michigan and several areas in Delta County have been designated as "high risk" erosion areas under the Michigan Shorelands Protection and Management Act. The impact of shoreline erosion on the quality of the waters of Lake Michigan remains undetermined.

The severity of the erosion problem varies throughout the bay, with some areas experiencing damaging erosion, whereas, others are experiencing little or no erosion. The problem has also been addressed by the DNR, which has identified high risk erosion areas.

In Ford River Township, erosion problems exist south of the mouth of No-See-Um Creek, 1½ miles north of the mouth of Bark River, ½ mile north of Breezy Point, and the Ford River public access site.

Water levels are so high in the Portage Marsh that large portions of the cattail cover have been "lifted" by the water, broken loose, and floated away to wash up on nearby beaches. Nesting and brooding use of the marsh by waterfowl appears to have diminished during this high water period.

Erosion problems exist in the Sand Island area, Escanaba's Municipal Dock, Saunders Point (Gladstone), and the mouth of the Days River. Flood problem areas include the shoreline of Escanaba, the shoreline of Gladstone, and portions of Rapid River. The Sand Island erosion is a severe problem consisting of nearly seven feet of erosion per year. Present efforts to contain the problem are discussed in the chapter on Recreation.

DRAINAGE BASINS

The water quality of Little Bay de Noc is also influenced by activities that take place many miles away. Approximately 2,330 square miles of land drain directly into Little Bay de Noc. The bay's drainage basins are the Ford River, Bark River, Escanaba River, Whitefish River, Days River, Tacoosh River, Rapid River, Stonington Peninsula (includes Squaw Creek and Black Gorge), and Little Bay de Noc Coastal (Portage Creek). The following is an explanation of the conditions of each drainage basin as it relates to possible influence on the water quality of the bay.

a. Bay de Noc Coastal (Stonington Peninsula)

This basin has no dischargers and is sparsely populated. No problems in terms of water quality have been identified.

b. Days, Tacoosh, and Rapid River Basins

The only permitted discharger in this basin is the Rapid River Cheese Company.

There is a water quality problem in this watershed which is chiefly associated with proximity of bedrock to surface and subsurface sewage disposal. The community of Rapid River has bedrock or heavy soil problems. This location is known to have localized septic failures and drinking water contamination, but sampling data for the watershed is generally lacking. Wastewater treatment needs for Rapid River has been treated in detail in the Municipal Wastewater Facilities section of this report.

c. Whitefish River Drainage Basin

There are no discharges in this basin and no water quality problems were identified. Soils and generalized drainage are good in the area of the river mouth and on the east bank. Natural limitations for septic tanks, coupled with zoning and health department regulation, should provide adequate controls to minimize the impacts of development.

d. Escanaba River Basin

The Escanaba River has water quality limitations from its mouth at Little Bay de Noc to a point two and a half miles upstream. The Michigan Department of Natural Resources has designated this particular segment as a water quality limited segment for Biochemical Oxygen Demand (BOD). In general, if additional waste loadings occur on the river, the (BOD) may surpass the acceptable water quality standards. If the source of the additional waste loadings can be determined, corrections may have to be made.

There are two permitted dischargers in this basin and both fall within the water quality limited segment of the Escanaba River. They are: Mead Paper Incorporated which discharges to the Escanaba River, and American Cynamid which also discharges to the Escanaba River.

The only significant discharger in this basin is Mead Paper Incorporated. Industrial wastes are treated in a large aerated lagoon system and discharged to the river. The plant has been meeting water quality effluent limitations on a regular basis.

With the possible exception of incidental contamination by upstream homes, hunting camps, and septic systems, no upstream sources of pollution have been identified at this time.

e. Little Bay de Noc Coastal

This basin includes the largest population centers in the county. The Cities of Escanaba and Gladstone, and densely populated portions of Wells and Escanaba Townships are included within its boundaries.

There are four surface dischargers to Little Bay de Noc in this basin:

1. City of Gladstone Wastewater Treatment Plant
2. City of Escanaba Power Plant
3. City of Escanaba Water Treatment Plant
4. City of Escanaba Wastewater Treatment Plant

The City of Escanaba Wastewater Treatment Plant is considered a major discharger, but the effluent is considered excellent at this time.

The effects of storm water discharges on water quality of Little Bay de Noc from the urban area is as yet undetermined. There is no obvious evidence of degradation near either community except from an aesthetic viewpoint in Gladstone, where a storm sewer discharges to the yacht basin and debris collects in a confined area.

According to the Michigan State Department of Health, the Escanaba Water Treatment Plant is a documented problem. They are currently discharging filtrant consisting of clarifier sludge and backwash water. Currently a permit is being worked up for this situation. They are presently under an interim permit.

Septic systems in Kipling are only marginally functional, due to the characteristic high water table and heavy soils in the area. There is a problem of local ground water contamination and surface water contamination of Little Bay de Noc.

h. Ford River Basin

There are no permitted discharges in this basin.

Some sewage discharge, directly to the Ford River, is suspected by health officials. This suspicion is reinforced by DNR STORET water quality data, where at times of low flow, fecal coliform bacteria, and total phosphorus exhibit elevated levels. During the winter months, especially during late January and early February, elevated levels of chloride indicate some road salt contamination.

i. Bark River Basin

Currently, no permitted discharges are present in this basin. Residential and commercial development is not intense in this watershed, as most of the land use is agricultural. The largest community in the basin is the town of Bark River. Heavy soils lend themselves to septic failure. The potential for ground water contamination is present but not really imminent. Some residents have directly connected their sewage systems to the state highway storm drain system. The Township received a Facilities Planning Grant and is working to correct the situation.

The Bark River, downstream from US-2 to the river's mouth at Lake Michigan, is largely agricultural with sparse residential development. Except for a few instances of livestock watering and cropping close to the streambank, no problems have been identified.

In order to detect water quality problems in the various drainage basins which in turn affect the water quality of the bay, water quality monitoring will be important. A document prepared by the CUPPAD Regional Commission called Water Quality Monitoring Recommendations suggest that additional testing take place at the mouth of the Bark River and Escanaba River and the bay itself.

The Department of Natural Resources water monitoring program for water year 1980 will include the Escanaba River at US-2 & 41 bridge and the Ford River at M-35 bridge under the Great Lakes Tributary Monitoring Program. The water intakes of Gladstone and Escanaba have provided some monitoring of the water quality of the bay, however, the DNR's Water Intakes Monitoring Program is being suspended for Fiscal Year 1980. Some indications of the water quality of the bay can be obtained through a continuous testing program at the Escanaba and Gladstone water supply plants to determine the effectiveness of the filtration process. This is required by the Michigan Department of Public Health. An effective water quality monitoring program for the bay and its drainage basins would be helpful in evaluating problem areas.

NON-POINT POLLUTION

Inspection of DNR STORET data reveals a relatively high chloride content at main highway river crossings in the Escanaba/Gladstone urban area. Because this data is limited, it is not possible to draw any conclusions. It appears that higher salt concentrations were found on the Ford, Escanaba, and Whitefish Rivers in the months of January, February, or March, depending on the time of runoff. Higher concentrations near bridge crossings have indicated possible residuals from highway deicing compounds.

Some concern has been noted with regard to ore boat ballast being discharged into the bay. The problem here is that the ore boats take on ballast in polluted waters and releases it here when loading. In addition, the practice of deck cleaning while in the bay is believed to have caused problems with beach maintenance. The material tends to float up onto the beaches if the conditions are right.

Specific water pollution problems usually from forestry activities were not identified in Delta County. Due to favorable soils, slopes, and adequate management practices, forestry activities do not appear to have any significant impact on water quality. It should be noted here that detailed water quality information was not available to assess any possible subtle effects of forestry activities on water quality.

The potential for agricultural pollution in an intensely farmed area is very high according to EPA. Historically, agriculture's most significant contribution to pollution loadings of lakes and streams has been in the form of sediments. In addition, continuous applications of pesticides and herbicides can contribute substantially to the pollution of bodies of water flowing through or adjacent to intensively used agricultural lands.

Another problem that has been associated with farming activities is the location of feed lots near water courses with minimal or no setbacks from a water body. Additional intensive farming practices that can result in adverse water quality impacts include cultivation up to stream banks, continuous cropping, up and down hill plowing, lack of shelter belts, winter manure application, and the indiscriminate application of fertilizer, nutrients, and chemicals.

Near the community of Bark River, northwest of Highway M-35 and south of US-2, some occurence of cropping up to the banks of the Bark River and livestock watering related bank breakdown have been identified. Intensive or detailed water quality sampling data is not available, and the scope of the problems cannot be discerned at this time.

There is a need in Delta County for increased participation with the Soil Conservation Service. At present, 67% of the farms in the county have Soil and Water Conservation plans with the SCS, the remaining one-third still needs to be covered by conservation plans.

FISH AND WILDLIFE

This section of the study largely utilizes a recent DNR Preliminary Fisheries Plan. The shoreline habitat and shoal areas of Little Bay de Noc provide suitable spawning grounds for northern pike, smallmouth bass, perch, smelt, alewives, walleyes, lake trout, whitefish, and various species of minnows. The bay also has very good shoreline habitats for waterfowl reproduction with the Portage Marsh having one of the most concentrated wildlife populations in the state. The preservation of these areas will be an important factor in maintaining and increasing the various fish and wildlife populations.

For various reasons throughout the last century, fish populations in the bay have fluctuated. In 1885, early commercial fish catch records for Michigan's waters of Green Bay clearly indicate herring, whitefish, lake trout dominance. In a typical year (1885), these three species accounted for over 87% of the total harvest. By 1957, the alewife, an anadromous migrant from salt water, was firmly established and entered the commercial catch. Since 1962, this low value species has accounted for over 50% of the commercial catch in Green Bay waters.

Proper management of fish populations in Little Bay de Noc will be needed if the high value fishery is to be re-established. Foremost among the problems facing rehabilitation of Great Lakes fish stocks was the sea lamprey predation. Toward the end of the 1960's, sea lamprey control became a reality, and with it came positive responses of native stocks of whitefish, burbot, and northern pike and of planted stocks of pike, rainbow, steelhead, brown trout, and coho salmon.

High rates of commercial fishing were recognized threats to the success of rehabilitation programs. It is imperative that survival to maturity of native and planted stocks be maximized to assist in the recovery of depressed populations. In 1970, commercial fishing activity was curtailed for all species except smelt and alewife in Little Bay de Noc under the Department of Natural Resources Zone Management Plan. Under this plan the number of participants in the commercial fishery and the amount of fishing time per year per participant was reduced in an effort to give various species of fish the opportunity to expand their numbers.

A third threat to the rehabilitation of high value fish stocks has been the overabundance of competing low value species such as smelt, alewife, and suckers. About 90% of the commercial catch in the late 1960's consisted of these low value species. The introduction of coho and chinook salmon into Lake Michigan was designed to help control the abundance of low value species and convert them into a high value product.

Sport fishing also has an impact on the rehabilitation program of the bay. One case was with the coho salmon which were introduced into Haymeadow Creek, a tributary to the Whitefish River, from 1968 through 1972. It was hoped that an open water fishery in upper Little Bay de Noc would develop. Each year

returning adults quickly passed through Green Bay and Little Bay de Noc and moved up the Whitefish River into Haymeadow Creek. A carnival atmosphere centering around a snag fishery developed each fall. Because the anticipated open water fishery did not develop and much criticism was received concerning the fishery in Haymeadow Creek, the coho salmon management program was discontinued after 1972.

If the fishery of Little Bay de Noc is to be restored to past numbers, cooperation between all involved must take place. Evidence of this joint effort to re-establish the commercial and sport fishery has been noted through various studies. Scientific research permits have been issued to several licensed commercial fishermen from 1971 through 1977 to fish with impoundment gear in Little Bay de Noc for whitefish. These permits, by limiting fishing to winter and early summer months, have provided valuable data needed for the determination of an accruate harvest quota for this species.

Fisheries Division personnel in 1972 and 1973 tagged and released sublegal and legal whitefish from commercial impoundment nets at several locations in the bay. The project attempted to determine migratory and general movement patterns of the fish throughout northern Green Bay.

Data received from the scientific research permits and tagging studies suggest an annual quota of 20-30,000 pounds of whitefish may safely be harvested from the bay on a sustained basis.

Uses in shoreland areas should be limited to those that will not interfere with the preservation and maintenance of fish and wildlife habitats. The following is a list of marshes on the Little Bay de Noc shoreline that have a high wildlife value:

a. Mouth of Ford River
b. Escanaba and Portage Bay
c. Mouth of Escanaba River
d. South of Gladstone
e. Mouth of Days River
f. North end of Little Bay de Noc
g. South of Squaw Point
h. Peninsula Point

Since some of these areas are heavily used during the waterfowl hunting season, steel shot restrictions would protect the waterfowl from lead poisoning. The Technical Advisory Committee has endorsed protection of these areas as part of the Management/Regulatory recommendations in this report. A map and index related to critical habitat areas can be found on pages 23a and 23b.

DEVELOPMENTAL LIMITATIONS

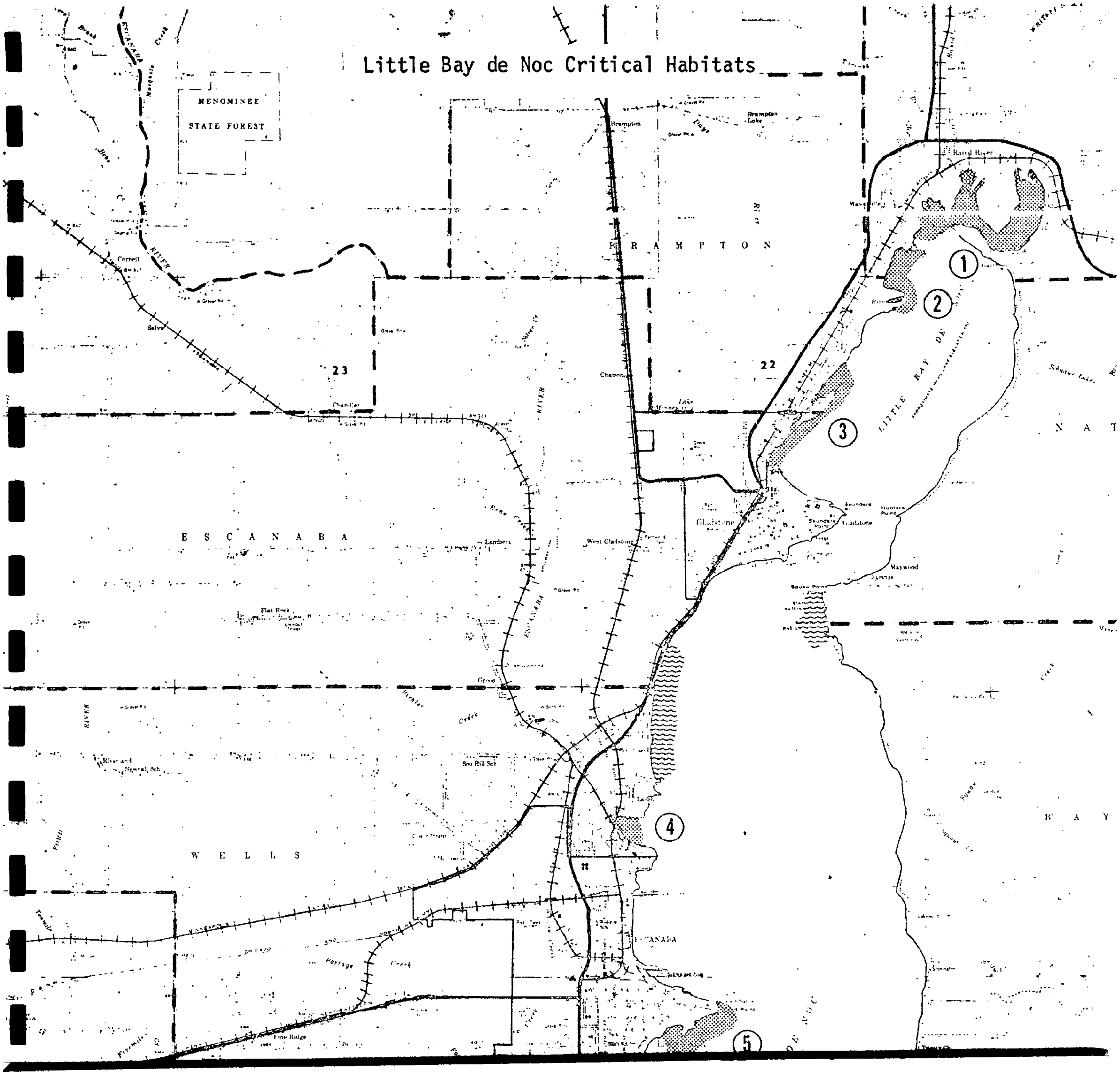
Increases in shoreline development and the expected increased pressure to develop the bay's lakeshore raises the question as to whether every type of use should be permitted to locate along every type of shoreland. The most troublesome shore types are: 1) artificial fills, 2) erodible low bluffs, 3) erodible low plains, and 4) wetlands.

INVENTORY OF CRITICAL FISH HABITAT AREAS

Map No.	Name	Location	Comment
1	Whitefish River Estuary	Extreme head of Little Bay de Noc, T41N, R21W, Sect. 28, 29, 30, 31.	Critical reproductive habitat for walleye, northern pike, yellow perch, smelt, panfish, smallmouth bass, and white sucker.
2	Masonville-Days River Area	T41N, R21W, Sect. 31 T40N, R22W, Sect. 2	Critical reproductive habitat for walleye, northern pike, yellow perch, smelt, panfish, and smallmouth bass.
3	Kipling Area	T40N, R22W, Sect. 10, 11, 6.	Critical reproductive habitat for walleye, northern pike, yellow perch, panfish, and smallmouth bass.
4	Escanaba River Mouth	T39N, R22W, Sect. 7, 18 8, 17	Critical reproductive habibat for walleye, northern pike, yellow perch, sauger, smallmouth bass, and panfish.
5	Escanaba Yacht Harbor	T39N, R22 W, Sect. 29	Critical reproductive habitat for northern pike, yellow perch, and panfish.
6	Portage Marsh	T38N, R22W, Sect. 6, 7 T38N, R23W, Sect. 1, 12	Critical reproductive habitat for northern pike, yellow perch, and panfish.
7	Ford River Breezy Area Point	T38N, R23W, Sect. 21, 22	Critical reproduction habitat for walleye, smallmouth bass, while and longnose sucker, and lawyer.
8	Round Island-No See-Um Creek Area	T38N, R23W, Sect. 31, 32	Critical reproductive habitat for lake trout and and northern pike.

NOTE: The east side of the lower bay between Squaw Point and the Community of Stonington has been observed as having significant habitat characteristics for whitefish reproduction.

Little Bay de Noc Critical Habitats



The Stonington Peninsula is dominated by soils of the Nahma-Ensley and Angelica-Cathro and Tacoosh Association with Tawas-Carbondale, Lupton, and Rifle-Roscommon Associations present. Both of these major soil associations have poorly drained substrata. These associations, therefore, present limitations in terms of general suitability for intensive use.

As indicated earlier, the low lying portions of the community of Wells are experiencing serious septic tank failure problems because of high water tables and organic soils. The high ground water areas have been identified by the Delta-Menominee District Health Department as having a high potential for ground water pollution in the future, primarily due to the intensive nature of current and projected residential development.

These are some of the common problems that should be recognized if development is to take place. In general, if development is to occur in a particular area, the following should be considered:

a) Locate new development in areas where the natural environment is suitable.
b) Assure that the proper steps are taken to protect property in high risk erosion areas.
c) Correlate the use of land with the suitability of soil.
d) Protect ground and surface waters from contamination resulting from improper sewage treatment.
e) Encourage well-designed concentrated development in specific areas in order to preserve the rural nature of the area and to best accommodate necessary growth.

These considerations are reflected in the Goals and Policies of this Report and the more specific Management/Regulatory Recommendations.

Funding

Various agencies have programs to protect or correct problem areas related to the environment. The Coastal Zone Management Program and Waterways Division of the Michigan Department of Natural Resources and the U.S. Army Corp of Engineers have helped with erosion stabilization projects. The Fish and Wildlife Division of the DNR is involved with fish plantings. The Michigan Land Trust Fund is a land acquisition program for public ownership. The Farmers Home Administration provides funding for water and sewer projects. The DNR, through the Environmental Protection Agency, provides funding for wastewater projects. The Agricultural Stabilization and Conservation Service (ASCS) provides funding for implementing agricultural conservation. The Department of Housing and Urban Development also provides funding for water and sewer projects.

These are some of the funding avenues that can be tapped. Each program varies with respect to their eligibility requirements related to a particular project and available funds.

ENVIRONMENTAL/LAND USE REGULATIONS

The Little Bay de Noc Management Program represents the first attempt to view the bay in its entirety. The Technical Advisory Committee in this report is recommending that a unified land use concept be developed for the bay utilizing

the Delta County Planning Commission as the central coordinating body. Land use regulations around the bay should be coordinated around the agreed upon land use concepts outlined in this report including joint review meetings wherever possible. To make these recommendations work, it is important to recognize from the beginning, the present disparity in land use regulations and the specific needs for coordination.

The environmental or land use regulations that pertain to Little Bay de Noc have not developed from a unified, rational plan of action or from any set of local, state, or federal priorities. Rather, over time, regulations that affect the bay have been adopted by separate levels of government responding to separate statutes addressing separate problem areas. Nowhere is lack of forethought for coordination and overlap more evident than in regulations applying to shoreland areas. The following synopsis of federal, state, and local regulations provides the background for the recommendations contained in this report.

Applicable Federal Regulations

The Clean Water Act, the Coastal Zone Management Act, and the National Flood Insurance Program are the three federal land use regulatory programs that most directly impact the bay. All of these programs are to be directly implemented by state or local regulations meeting federal guidelines.

The Clean Water Act divides water pollution problems into two basic types: point source which comes from such direct outlets as a pipe or nonpoint source which derives from other than a direct measurable outlet and would include such sources as septic tank fields, agricultural runoff, etc. The state amended the Michigan Water Resources Commission statute to comply with the point source requirements and discharge permits for industrial or wastewater facilities are obtained from the DNR operating under that statute. Specific point source problems were detailed in an earlier section. Water/wastewater facility projects to bring bay area localities into compliance are included as part of the Capital Improvements Program. Nonpoint source pollution in Michigan is to be controlled by methods developed in the regional water quality plans. The six county study which includes the bay and was completed by the CUPPAD Regional Commission calls for greater lake setback (100 feet) for septic fields and conversion of some areas, Wells and Rapid River, from septic systems to sewer systems.

The U.S. Coastal Zone Management Act resulted from the Congressional findings that "important ecological, cultural, historic, and esthetic values in the coastal zone wich are essential to the well-being of all citizens are being irretrievably damaged or lost," and that state and local efforts to date have been inadequate. Although not establishing any direct federal regulation of shorelands, the act provides that if a state develops state programs meeting federal minimums, the state will be eligible to participate in the federal program. The State of Michigan has complied with this program through a variety of existing state regulations, the most critical of which are reviewed below.

The goal of the third federal program, the National Flood Insurance Program, is to reduce the need for flood disaster relief by requiring local adoption of regulations to control development in identified floodplains. Local jurisdictions

will be flood mapped nationwide for floodplain and flooding areas. These maps will be done in stages of increasing specificity and the more specific the mapping becomes, the more stringent the local land use controls must be for the local unit to enter or remain in the program. If the local unit of government does not enter the program, then federal sanctions apply within the identified areas. These consist of the prohibition of the use of any federal funds, including VA or FHA loans to individuals, for any construction within the identified floodplain zones.

Along Little Bay de Noc, the Townships of Ford River, Wells, Brampton, and Masonville and the Cities of Escanaba and Gladstone were mapped and the federal requirements for adoption of the regulations were mandated. The local regulations are to consist of a series of requirements for elevating or floodproofing of structures, septic, sewer, water, and utility connections or facilities and for development or construction in a manner which minimizes flood risk. These regulations are to be adopted as established by the federal government by the cities or townships and are to apply to the areas identified in the federal maps.

The CUPPAD Regional Commission and State DNR hydrologists have been attempting during the last three years to have many maps rescinded or redrawn and to develop an alternative to local adoption of the federal ordinance model. The maps, drawn in Harrisburg, Pennsylvania, on the basis of USGS twenty foot contour maps, have been highly inaccurate. In addition, the required regulations overlap and duplicate many present state or local regulations.

To date, the effort has been successful in having inland floodplain maps rescinded entirely and in Delta County that resulted in the rescission of the maps for Bark River and Escanaba Townships. Redrafting of the coastal township maps to include only a strip along the coast or a major river may be soon forthcoming. General agreement on an alternative to the federal regulatory model has been reached and details are being slowly developed with the Federal Emergency Management Agency. After having their maps redrawn to reflect much more limited flood boundaries, Escanaba and Gladstone joined the program, entrusting enforcement to their present building/zoning officials. Brampton Township also joined the program. The Townships of Ford River, Wells, and Masonville have not passed the local ordinances pending outcome of the regional/state/federal negotiations.

State Regulations

Michigan has several single purpose regulatory programs that impact on shoreland areas, the requirements of which must technically, legally be met, under the state Construction Code Act, before a local building permit may be issued. These regulations, in conjunction with each other, provide for Michigan eligibility under the federal Coastal Zone Management Act. The major regulations, which will be discussed here, include the Shorelands Protection and Management Act, the Great Lakes Submerged Lands Act, the Soil Erosion and Sedimentation Control Act, the Inland Lakes and Streams Act, and the Wetlands Act.

The Shorelands Protection and Management Act provides for regulation of use or development within three types of shoreland areas: "environmental areas" necessary for the preservation and maintenance of fish and wildlife, "high risk erosion areas" subject to erosion, and "flood risk areas" subject to

flooding. The statute and accompanying regulations further provide that approved local zoning ordinances would replace direct state review and permits, although the Department of Natural Resources would retain an overview of the zoning administration. The high risk and environmental areas will be designated within a shorelands zone extending 1,000 feet landward of the ordinary high water mark of the Great Lakes and connecting waterways which include the St. Mary's River, Detroit River, St. Clair River, or Lake St. Clair. Also included in the zone will be lands bordering or adjacent to waters affected by levels of the Great Lakes, which would refer to coastal lakes and river mouth areas.

The flood risk areas are not limited to the 1,000 foot zone, but include areas determined "on the basis of studies and surveys to be subject to flooding from effects of levels of the Great Lakes." Only areas actually designated within the shoreland zone are subject to permit requirements. The entire shoreland zone does not, thus, fall automatically under state or local permit review. The procedure for designation is outlined below.

Requirements imposed upon designated areas will depend upon which type of area it is designated as and the specific characteristics of that area. The purpose of the requirements and their potential scope are specified in the regulations. The high risk areas and flood risk areas are designated under the statute for the sole purpose of preventing property loss. In the high risk areas, moveable structures will be allowed if the partial depth is not adequate to permit the required setback and the requirements for permanent structures will entail setbacks for construction or, as an alternative, approved erosion control devices. Flood risk area requirements will entail elevation and/or floodproofing construction. The environmental areas are designated for the preservation and maintenance of fish and wildlife and the requirements will be concerned with changes in their habitat. In designated environmental areas, a permit from either the DNR or a local official acting under an approved local zoning ordinance would be required for dredging, filling, grading, or other alterations of the soil; alteration of natural drainage not including maintenance of established drainage improvement works or dikes; alteration of vegetation utilized by fish or wildlife for nesting, food, or protective cover; and placement of permanent structures. If an entire parcel is within a designated environmental area, a structure zone will be established in which these activities, including placement of a permanent structure, will not require any permit beyond the building or zoning permits normally applicable. Farming of land within a designated environmental area would likewise not require any permit beyond those normally applicable unless artificial drainage, pumping, or dikes are used.

The designation, potential local ordinance development, and state review shall proceed according to the steps outlined below:

1. The Department of Natural Resources shall consider areas for designation based on engineering and environmental studies which shall be based on the factors listed in the regulations appearing in this publication. Flood risk area designations shall be based on present studies listed in the regulations and these flood risk area designations do not require Steps 2, 3, and 4 below.

2. Prior to designation of either high risk or environmental areas, pre-designation letters shall be sent to affected landowners informing them that the area is being considered and inviting their comments.

3. Based on information from Steps 1 and 2, the DNR shall designate a high risk or environmental area and notify affected landowners and local governments of the authority and reasons for designation, a description of the area's limits, an explanation of any regulatory measures, the potential regulatory role of the local government, and the procedure for appealing the designation.

4. Any aggrieved party shall be granted an appeal hearing under the Michigan Administrative Procedures Act if a petition of appeal is filed within 60 days of the designation of a high risk or environmental area.

5. After a designation, the affected local government may enact a zoning ordinance or amendment to an existing ordinance that would affect the designated area and submit it to the DNR which has 30 days to approve or disapprove it. The DNR must approve the ordinance or amendment if it adequately enforces the statute and regulations. If approved, state permit requirements are removed. All subsequent zoning ordinance amendments affecting a designated area must be similarly approved and copies of all variances must be sent to the DNR. Approval may be rescinded and state permit requirements renewed if the local government fails to properly administer an approved ordinance. Appeal of DNR actions is similar to Step 4.

6. In the absence of an approved ordinance, a permit from the DNR must be obtained for a new permanent structure in a high risk or flood risk area or for one of the listed uses in an environmental area. No permit is required for a new permanent structure in a flood risk area if the structure is in a subdivision for which approval is required under the Subdivision Control Act. No permit is required for uses in a structure zone of an environmental area. The DNR must either approve or disapprove a permit application within 60 days of its filing. Appeal is similar to Step 4.

The Great Lakes Submerged Lands Act regulate the filling, dredging, or building upon the bottomlands of the Great Lakes below the ordinary high water mark. If an owner or developer desires, basically, to change the characteristics of the bottomland, an application must be made. The DNR is to review the application to determine the potential effect upon the public trust which exists in the bottomlands. Fish habitat is a specific reason for protection of bottomlands from alteration. It is significant to note, however, that this statute does not provide any regulatory authority regarding upland changes above the ordinary high water whether or not they would affect the water or habitat quality.

Upon the receipt of an application, the DNR mails copies to the state department of public health and the "clerks of the county, city, village, and township, and drain commissioner" of the affected area and to adjacent reparian owners which is accompanied by a statement that unless written objection is filed within 20 days, the DNR may take action to approve the application. Review and approval may be accomplished by the local DNR officer. Before a permit or application is approved, the applicant is to receive approval, if necessary, from the Army Corps of Engineers, the Michigan Waterways Commission, and the local unit of government.

Under the Soil Erosion and Sedimentation Control Act, the State Department of Agriculture has submitted to the DNR for its approval, a unified statewide

soil erosion and sedimentation control program now codified by the DNR in Rule 323.1701 et. seq., of the Michigan Administrative Code. County enforcing agencies, which are appointed by the county board and may be any county officer, board, commission, department, or other county entity, are to be responsible for the administration of the regulations throughout the county including cities and villages, unless a city, village, or charter township has in effect an ordinance conforming to and approved under the act. A local ordinance may be more restrictive, but may not make lawful what is unlawful under the act or regulations. Regulated under the regulations are earth changes which are defined as changes to one acre or more of land within 500 feet of a lake or stream. The act and regulations do not apply to:

1. The industry generally referred to as logging.

2. The industry generally referred to as mining.

3. The plowing or tilling of land for the purpose of crop production or the harvesting of crops.

4. A person engaged in agricultural practices who has entered into an agreement with the appropriate soil conservation district to pursue such agricultural practices in accordance with the act and regulations. Notification by the district to the enforcing agency and DNR is required and the person remains liable to enforcement under the agreement although site plans, land use plans, or permits under the ordinance or regulations are not required.

5. Actions of a state agency, city, village, charter township, county, or a county agency whose soil erosion and sedimentation control procedures have been found adequate under the act and regulations by the DNR after review by the local soil conservation district. Such a finding leads to the local or state unit or agency becoming an "authorized public agency" not amenable to the local ordinance or regulation requirements, but still subject to enforcement if the practices, methods, or actions later violate the act, regulations, or ordinance.

General law townships may not be or name local enforcing agencies and may not apply to become "authorized public agencies." They may, however, be prosecuted for violation of the act, a local ordinance, or the regulations. A county or local enforcing agency must notify the DNR of all violations of the act, regulations, or a local ordinance. The DNR or the county or local enforcing agency may maintain an action in a court with jurisdiction for all violations except those of a person who has entered an agreement with the local S.C.D. The DNR is also given overall enforcing authority and, after a hearing, may make a final determination concerning violation by anyone or any unit, of the act, regulations, or local ordinance, or concerning the failure of the local enforcing agency to enforce any of the three. After the hearing, the final order or stipulation or consent order is conclusive unless appealed within fifteen days in circuit court.

The statute makes the regulations and enforcement procedure mandatory throughout the state. The cost of local review are to be borne by the local units or agencies involved except that they may provide for fees to be charged for inspections and plan reviews. The statute provides that two or more counties

may cooperate in the enforcement of the act through the Urban Cooperation Act. The regulations do and the local ordinances could address most location, modification, or construction methods or other activities or substantive land changes which might result in nonpoint discharges into adjacent waters.

The Inland lakes and Streams Act may be said, in general, to be the counterpart to the Great lakes Submerged Act. Under this statute, inland bottomlands are to be protected through review of proposed alterations to those bottomlands. Specifically, Section 3 of the statute provides:

> Sec. 3. Except as provided in this act, a person without a permit from the department shall not:
>
> (a) Dredge or fill bottomland.
> (b) Construct, enlarge, extend, remove, or place a structure on bottomland.
> (c) Erect, maintain, or operate a marina.
> (d) Create, enlarge, or diminish an inland lake or stream.
> (e) Structurally interfere with the natural flow of an inland lake or stream.
> (f) Construct, dredge, commence, extend, or enlarge an artificial canal, channel, ditch, lagoon, pond, lake, or similar waterway where the purpose is ultimate connection with an existing inland lake or stream, or where any part of the artificial waterway is located within 500 feet of the ordinary high water mark of an existing inland lake or stream.
> (g) Connect any natural or artificially constructed waterway, canal, channel, ditch, lagoon, pond, lake, or similar water with an existing inland lake or stream for navigation or any other purpose.

Permits are not required for "a seasonal structure placed on bottomland to facilitate private non-commercial recreational use," for reasonable sanding of beaches, construction or maintenance of an agricultural drain, minor drainage facilities, or wastewater facilities otherwise approved. The DNR, upon receiving an application, is to send copies to the local health department, the city, village, township, and county affected, the local soil conservation district, and local port commission, if there is one. Each of those units or agencies has twenty days to reply in writing.

Essentially, the statute covers modifications of the bottomlands, bridge, or culvert construction, bulkhead lines, haul roads, and similar activities. The DNR is to balance the application against any detriments to the public trust or reparian rights. A public hearing may be held if a proposed project is controversial or if additional information is needed.

Further DNR regulatory power through the recent wetlands act will apparently await an inventory in this area of present wetlands.

Local Regulatory Powers

Zoning ordinances potentially provide the most far reaching of local land use controls. Separate zoning ordinances along the bay are presently administered by Ford River Township, the Cities of Escanaba and Gladstone, Delta County (covering Wells, Brampton, Ensign, and Bay de Noc Townships), Escanaba Township, and Masonville Township. Within the cities' limits, the development pattern

is generally already set. In the unincorporated areas, zoning becomes a more critical factor for setting the development trend. Major zoning issues include:

- Lack of coordination within the ordinances or among the administrators/ boards carrying out the ordinances. An overall land use concept for the bay is non-existant.
- Lack of enforcement of use restricting. Delta County has the most prohibitive ordinance with Open Space, Timber Production, or Rural Residential districts lining a good portion of the shore. These districts contain large lot and setback requirements, and in some instances prohibition of development, based on soils, access, and recommended usage. However, enforcement of these regulations must be considered spotty. Variances and rezonings within the county and township ordinances are routinely granted. Zoning may not really be said to have had a strong impact on bay development.

The Delta-Menominee health department code covering the bay shore is pertinent to bay development in that it regulates setback from the lake and distance from septic tank fields to groundwater. The lake setback is fifty feet from the lake for single-family residences and one hundred feet for any other use. Septic fields must maintain four feet isolation from groundwater. Often, if the property owner is willing to fill the area immediately around a home and septic tank, development is permitted in otherwise unsuitable areas. The sufficiency of these requirements has been questioned in, among others, the Areawide Water Quality Plan.

The Subdivision Control Act grants review authority over subdivisions of land to cities, villages, townships, county road commissions, county drain commissioners, the county plat board (county clerk, treasurer, and register of deeds), the local health department, and the Departments of Treasury, Natural Resources, Transportation, and Health. The so called "Plat Act" was repealed by this statute whose proper name is the "Subdivision Control Act" though it is often also referred to as the plat act. The local regulatory authority whose power is reviewed here include municipalities, which is defined as cities, villages, or townships, the local health department, the county road commission, and the county drain commissioner. The county plat board receives copies of the preliminary plat "for informational purposes" and is the final local authority to review the final plat "for conformance to all provisions of the Act." However, the plat board is not provided with regulatory standards of its own within the statute and its role should be viewed as that of confirming that all steps have been taken rather than as a separate regulatory agency in its own right. The plat board does play a role in checking up on local authorities and could itself enforce the act. Note that the county is not granted general regulatory authority under this statute. County review is restri. ed to the road commission, drain commissioner, and health department.

Final approval is vested at the state level and it has been the state which has generally moved or forced the local unit to move in the face of subdivisions. Note also, that platting is a mandatory procedure when the act applies. A local authority does not have the option of reviewing a plat or not. It is required to review plats under the statute whether it has published separate regulations under the statute or not. The relation to zoning is simply that a proprietor must comply with both the local zoning ordinance and all local or state subdivision regulations. Where one is stricter than the other, the stricter regulation would apply.

Perhaps the most difficult issue is when the statute applies and when, therefore, submission of a plat is required. There has been considerable discussion and several attempts at changing or clarifying the operative definition of "subdivide." Presently, "subdivide" means the following:

1. Partitioning or dividing of a continuous area or acreage of land,

2. By the proprietor thereof or by virtually anyone who may receive the land in fee or lease in virtually any manner from the proprietor,

3. For the purpose of sale, building development, or lease over a year,

4. Into 5 or more parcels,

5. Each of which is 10 acres or less in area,

6. Either at one time or by successive divisions within a period of 10 years.

A forty acre parcel may, for example, be broken into seven parcels before coming under the act by creating three parcel of 10.1 acres and four parcels out of the rest. Not that 5 or more parcels under 10 acres each have not quite been created and, therefore, the statute would not apply. Consider the breaking of a ten acre parcel into four parcels, three of which are two acres in size and the fourth is four acres. At this point, there has been no subdivision. If the fourth parcel is broken into two two-acre parcels, each two acres must be submitted though the other three parcels originally broken down do not fall under the act. Clearly, these are borderline cases and the intent of the statute concerns "subdivision" in the more recognized sense. Nonetheless, the present definition and application create peculiar results in a rural area like the bay area, and largely account for the confusion surrounding the statute.

Under procedures summarized below, the preliminary and final plats are submitted and reviewed by the various local and state authorities. The enabled reviewing authority for municipalities (townships, cities, villages), county road commission, county drain commissioners, and local health departments is outlined below:

A. Municipal Authority

(1) Under Section 259: "The standards for approval of plats prescribed in this act are minimum standards and any municipality, by ordinance, may impose stricter requirements and may reject any plat which does not conform to such requirements." Considerable control is, therefore, vested in municipal units and restrictions over subdivisions could clearly be based upon and implement parts of the water quality plan.

(2) Under Section 182, a municipality may require for all public and private streets, alleys, and roads in its jurisdiction that the subdividing conform to:

(a) the general plan, width, and location requirements that it has adopted and published as long as it doesn't conflict with county or state plans for the location and width of certain streets, roads, and highways.

(b) proper drainage, grading, and construction as provided in its published construction standards.

(c) installation of bridges and culverts where it deems necessary.

(d) requirements for completion of complete plans for grading, drainage, and construction to be prepared and sealed by a civil engineer registered in the state.

(3) In addition, the municipality may require cash deposit or surety for work and must reject a plat which is isolated from or which isolates other lands from existing streets, unless suitable access is provided.

(4) The municipality shall also require standards within the statute be met.

B. County Road Commission

The Commission has the same authority as the municipal unit regarding A(2) and (3) above as the plat relates to county plans and published rules. The road commission may bring suit to enforce its standards.

C. County Drain Commissioner

The drain commissioner shall require adequate storm water facilities and may require establishment of a county drainage district in accordance with the Drain Code.

D. Local Health Department

Standards are not specified, but would presumably include the local health code. Review is made of both preliminary and final plats. Violation of codes could be basis for rejection of plat.

Clearly, considerable regulations over subdivisions are possible under this statute if the municipal unit or county agencies decide to do so. For rules to be effective, they must be adopted by proper public procedures and published.

RESIDENTIAL

The existing housing stock in the Little Bay de Noc area is predominately single-family, owner-occupied, and relatively old. The percentage of rental units in the bay area (approximately 20%), in particular in the Escanaba area, should also be recognized.

The demand for multi-family housing, especially from the elderly population, has been quite conspicuous in the bay area. Even with 385 publicly subsidized multi-family units built in the area since 1970, there appears to be no end to the need for alternative housing for elderly and low-income families.

New construction of single-family home has been steadily declining over the last three years, the obvious result of the exorbitant cost and scarcity of construction funds nation-wide. Single-family construction has been most active in Wells and Escanaba Townships, with 151 and 148 new units respectively,

in the last 3 years. Escanaba City, Masonville, Ford River, and Brampton Townships have also shown signs of residential growth.

Mobile home ownership has attracted greater numbers in recent years in the bay area. If this trend continues, new demands may be placed on local governments to provide adequate space for mobile home owners to locate.

Due to the shortage of construction funds and the condition and age of the housing stock, housing rehabilitation programs, either through local banks or a local governmental unit, appear to offer at least a partial and practical solution to the growing housing needs of the bay area.

With the expansion of the Mead Paper Mill, there will be a strain placed on the area housing supply. Therefore, it is imperative that such avenues as mobile home parks, preservation of the existing housing stock, and additional rental housing be pursued.

Critical to development of properly planned housing and rental units will be the land use regulations in the area. Zoning, health department requirements, and flood insurance regulations provide the prime considerations regarding bay development. These were discussed in some detail in the previous chapter. The Technical Advisory Committee is recommending support of new multi-family housing for the Escanaba and Gladstone areas.

TRANSPORTATION

The study of the transportation system serving Little Bay de Noc will obviously be a critical part of every other area of study under the overall management program. The roads, rail lines, airport, and dock areas link the area together and provide connection to the rest of the nation and the world. The Little Bay de Noc area is in the fortuitous position of possessing an active, natural deep water port served as well by major rail lines and national and state highways. The potential of a new general cargo facility in light of these circumstances is a major reason for the study. The Technical Advisory Committee is in the fortuitous position of having the combination of expertise necessary to develop planning with consideration of all relevant factors including commercial-industrial potential, recreation, and environmental constraints.

There has been much emphasis in recent years placed on the concept of multimodal transportation planning. The multimodal approach basically refers to planning for a total coordinated transportation system, rather than at the subsystem level. Traditionally, transportation planning has been done at the modal level (e.g., highway plans, public transportation plans, etc.). This concept of total (or multimodal) transportation is based on the premise that there is an interrelationship among modes of transportation and an alteration in the characteristics of one mode can have an obvious effect on the operational characteristics of other modes. An example would be in the case of a rail abandonment forcing shippers along the rail line to now truck their product over highways. Increased truck traffic can quickly deteriorate a road and shorten the life of a bridge. In such situations, it is possible to predict the consequences of an alteration in the transportation system.

The need exists to develop a suitable balance among economic efficiency, energy, and environmental considerations. Potential changes in energy availability

may have a severe effect on the types of transportation available for use. As the energy situation worsens and costs rise, those modes of transportation, particularly rail and water which are energy efficient, will probably play a more important role in the distribution system. In our energy-scarce world, we obviously cannot depend on any single method of transportation. There is a need for railroads, as well as highways, and buses, as well as automobiles, to carry people and goods. After the following brief review of the transportation network connecting the bay, preliminary considerations regarding a general cargo facility and other transportation issues are presented.

Highway and Rail Connection

Figure 1 on the following page (taken from the recent Chamber of Commerce map) depicts the roadways surrounding the bay and some points of interest. The major highways serve the populated western shore of the bay. The Stonington Peninsula, including Twin Springs Park and Peninsula Point, is served by County Road 513, which is generally considered to be in poor condition and impassible in some sections during part of the year. Any consideration of recreational or historic site improvements on the peninsula will need to include consideration of road improvements as well.

Figure 2 depicts the state and county roads in the Central Upper Peninsula. It is clear from that map that the western shore of the bay is a traffic hub for both north/south and east/west transit through the Upper Peninsula. Some idea of the magnitude of the road traffic may be gained from Figure 3, which depicts 1975 average daily traffic figures. Although commuter traffic between Gladstone and Escanaba accounts for a large part of the high count along that corridor, the traffic load apparent on US-41, US-2, and M-35 clearly establishes the western shore area as an arterial hub for the Upper Peninsula.

Figure 4 depicts the major highways and rail lines in the Central Upper Peninsula. Little Bay de Noc is served by three major rail lines: The Soo Line, Chicago and Northwestern, and the Escanaba and Lake Superior rail line. In reviewing Figure 4, it should be noted that the Soo Line trackage between Rapid River and Eben has been abandoned and the Lake Superior and Ishpeming Railroad has recently received Interstate Commerce Commission permission to abandon its line between Marquette and Munising (excepting the 5.5 mile stretch between Munising and the Soo Line). The effect of these abandonments has been to increase truck traffic as local shippers have, over the years, transferred to truck and to decrease, to some extent, the amount of connecting traffic on the remaining lines.

Rail abandonments have posed a major problem for the Upper Peninsula as they have throughout rural areas of the nation. However, considering the large volume of traffic, largely iron ore, on the C&NW and the large interstate/international traffic on the Soo Line, the rail lines serving Little Bay de Noc would not appear in danger of abandonment. In addition, the E&LS has been aggressive in establishing service on its line and in its bid to purchase large sections of the Milwaukee Road line to the west, which has been in Interstate Commerce Commission abandonment proceedings for some time.

Delta County Airport

Delta County Airport is located on M-35, just south of Escanaba. It is an air carrier airport and serves Delta County and parts of Menominee and Schoolcraft

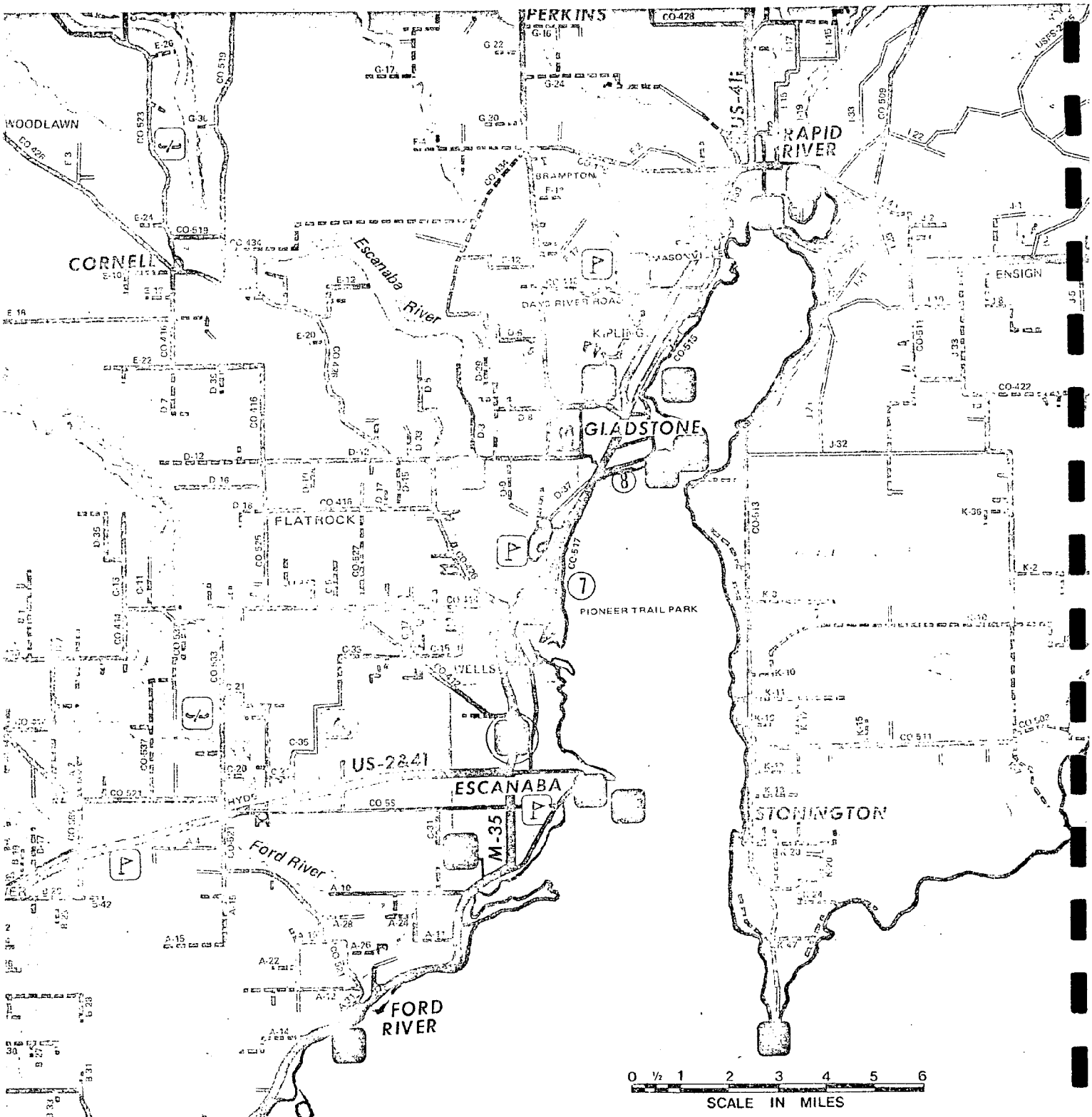

PERKINS
WOODLAWN
CORNELL
BRAMPTON
RAPID RIVER
US-41
Escanaba River
MASONVI
ENSIGN
DAYS RIVER ROAD
KIPLING
GLADSTONE
FLATROCK
PIONEER TRAIL PARK
WELLS
US-2&41
ESCANABA
M-35
Ford River
FORD RIVER
STONINGTON
Bark River
FULLER PARK
0 ½ 1 2 3 4 5 6
SCALE IN MILES

Figure 1

Figure 2

STATE AND COUNTY ROADS IN THE CENTRAL UPPER PENINSULA

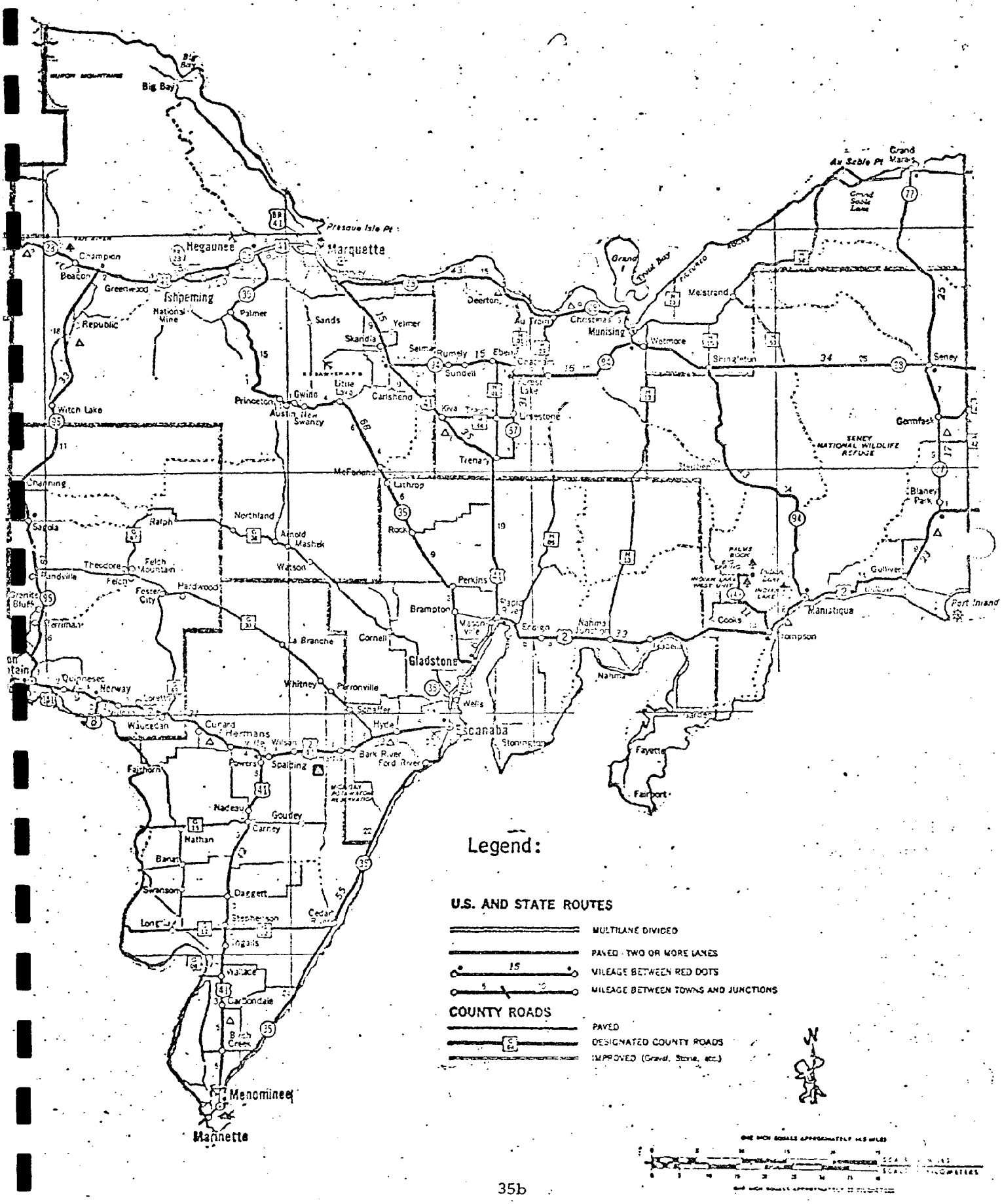
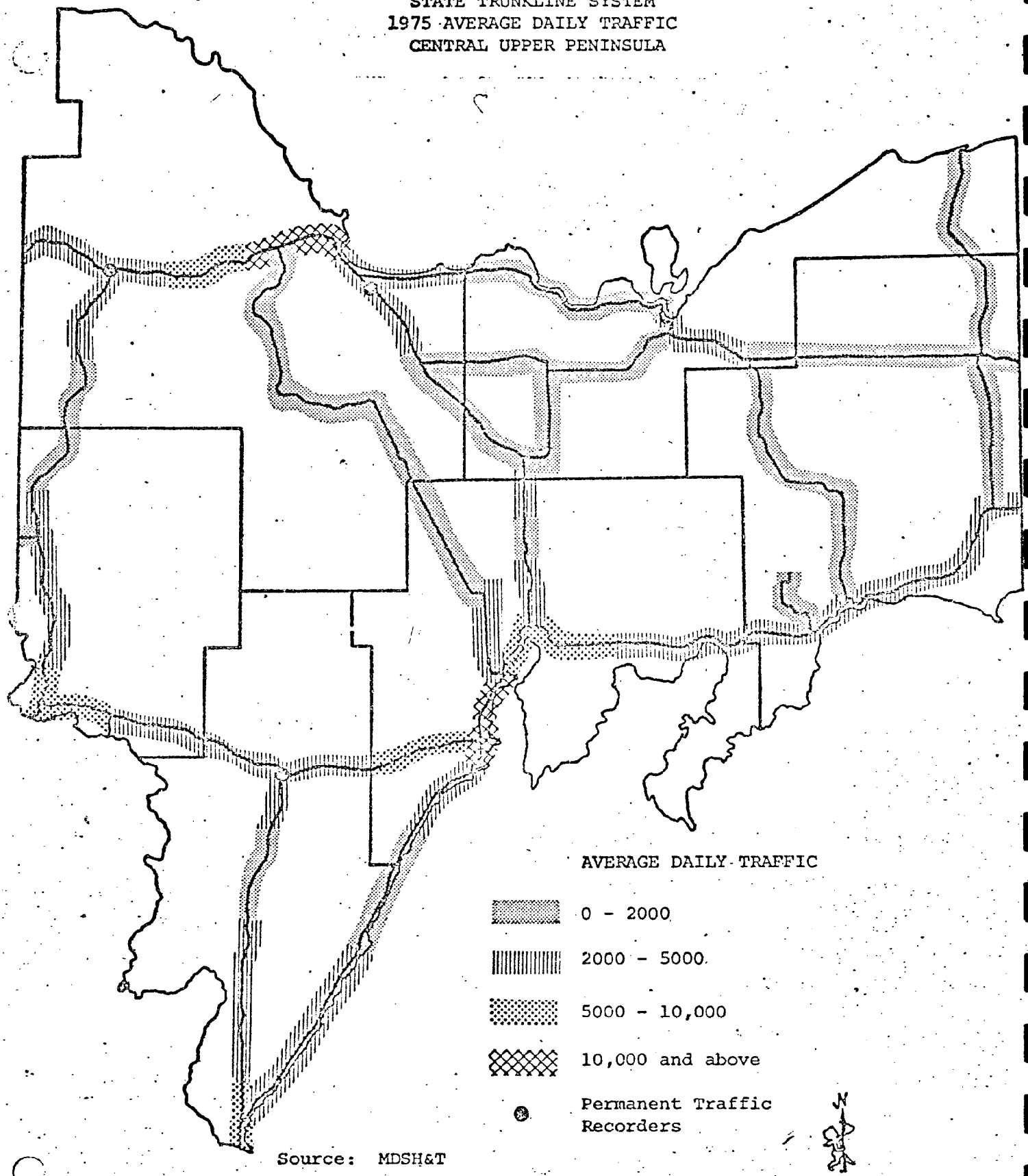


Figure 3

STATE TRUNKLINE SYSTEM
1975 AVERAGE DAILY TRAFFIC
CENTRAL UPPER PENINSULA

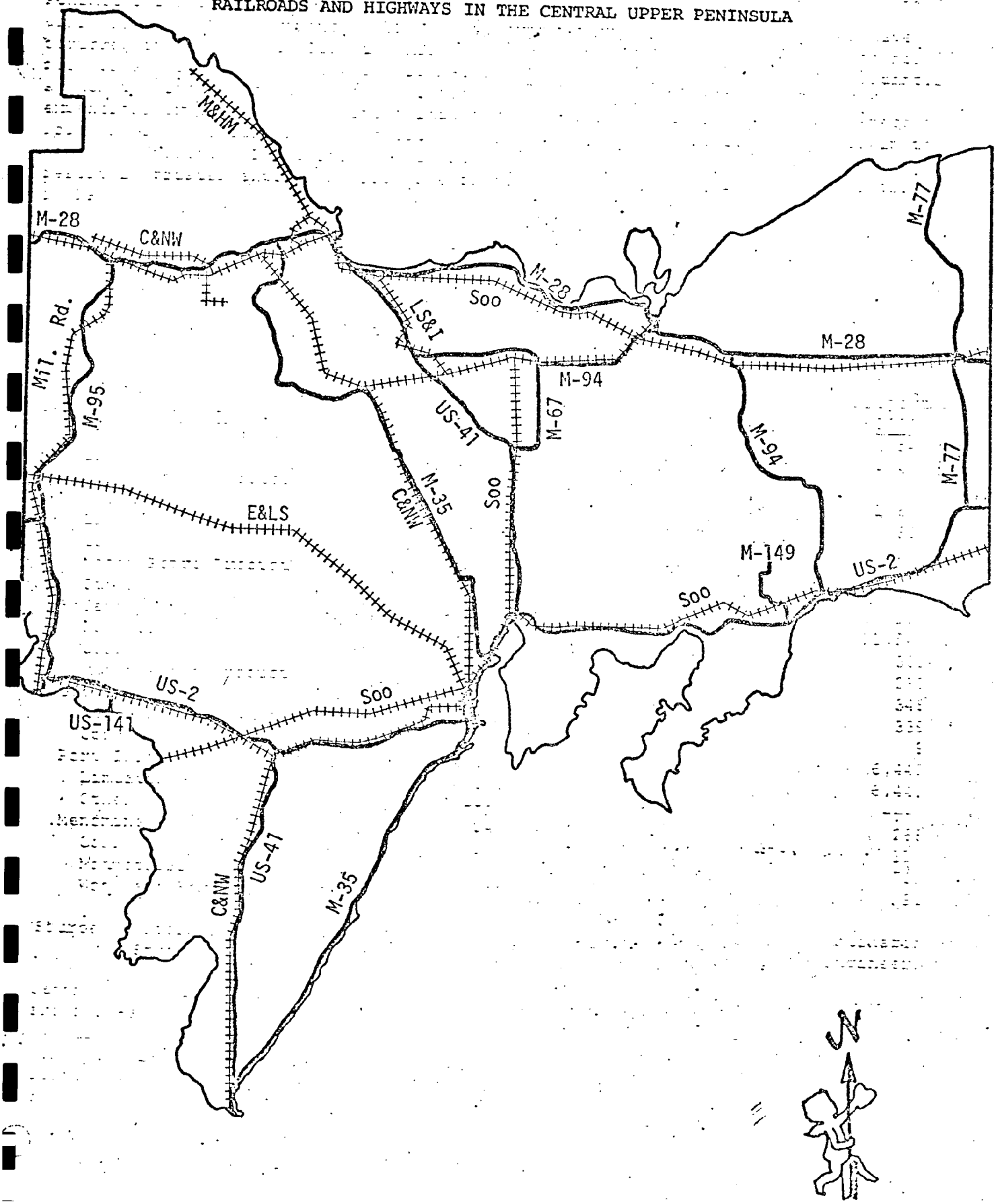


Source: MDSH&T

CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMENT
REGIONAL COMMISSION

Figure 4

RAILROADS AND HIGHWAYS IN THE CENTRAL UPPER PENINSULA



CENTRAL UPPER PENINSULA
PLANNING AND DEVELOPMEN

Counties. The airport is served by Republic Airlines with six flights per day, three south to Green Bay and connecting cities, and three north. In 1979, 42,843 passengers were enplaned. This amount may be somewhat overstated as passengers came from outside the normal service area when Ford Airport, in Kingsford, was closed for a few months for runway improvements.

The airport has two runways, a north-south and a east-west runway. The north-south runway is primarily used for general aviation. The runway was reconstructed in 1978. The east-west runway is the longer of the two, 6,500 feet. It was also improved in 1978. The width was increased to 150 feet to accommodate larger planes. The runway was resurfaced and a safety parallel taxiway added.

The Delta County Airport submitted two projects to the CUPPAD Regional Commission 1980 Transportation Project Priority List; expansion of the terminal facilities and expansion of the general aviation facilities. These projects are ranked 4 and 9, respectively. Plans for 1980 include the expansion of the general aviation ramp and security fencing around the periphery of the airport.

Water Transit/Cargo Facility

Considering the location of transportation linkages to Little Bay de Noc, it is not surprising that the bay now is a major port of the Upper Peninsula. Figure 5 depicts 1971-77 statistics on total short tons shipped via selected ports. The Escanaba statistics are dependent on iron ore shipments and that must be taken into account when considering the port as a possible general cargo facility. For example, the total 1977 tonnage for Escanaba breaks down as follows:

Commodity	Short Tons
Iron Ore and Concentrates	9,100,035
Coal and Lignite	154,722
Gasoline	108,752
Distillate Fuel Oil	121,858
Residual Fuel Oil	18,463
Petroleum and Coal Products	2,224
Fresh Fish	72

More recent statistics, including a detailed port inventory, are being obtained from the Michigan Department of Transportation, which is presently developing a port study in Michigan. Of course, any consideration of Escanaba as a "general" cargo port, as opposed to its present status as a "bulk" cargo port, must begin with an inventory of the potential general cargo volume, traffic connections, and what these factors mean in the interstate/international market.

Most studies, especially those postdating the rise in fuel prices, project substantial increases in cargo movements by water. The following table was developed by A.T. Kearney, Inc. in 1976, for the Army Corps of Engineers in a study entitled: "Great Lakes/Saint Lawrence Seaway Traffic Forecast Study".

Potential GL/SLS General Cargo Movements
(millions of short tons)

	U.S. Imports	U.S. Exports	All Other	Total
1972 base	15.0	9.2	5.4	29.6
1980	23.9	18.5	7.7	50.1
1990	63.7	35.9	13.9	113.5
2000	95.1	54.1	21.6	170.8
2010	143.1	94.5	32.7	270.3
2020	213.5	151.1	49.6	414.2
2030	316.8	240.3	75.3	632.3
2040	468.2	380.5	113.5	962.2

These totals, if they prove accurate, would represent a 5.2% average annual percentage increase for imports and 5.6% for exports. The Kearny Report also indicates that the potential for GL/SLS shipping has historically run ahead of actual shipping. Increasing fuel costs may be expected to increase the demand for and, therefore, the potential for ship/train long haul shipping.

Figure 5
FREIGHT TRAFFIC (Short Tons)

Harbor	1971	1974	1977
Duluth	37,050,852	40,344,702	33,419,210
Escanaba	9,381,838	9,685,677	9,506,126
Gladstone	320,779	230,924	232,783
Green Bay	2,763,287	2,531,487	2,476,718
Marquette	835,359	1,036,070	394,317
Menominee	279,372	152,398	124,259
Milwaukee	5,660,299	4,263,862	3,946,382
Port Inland	4,519,314	4,324,129	3,469,169
Presque Island	3,549,274	3,118,370	5,215,296
Sault St. Marie	116,564	87,464	69,942

Source: Waterborne Commerce of the United States, Part 3, Waterways and Harbors, Great Lakes, Army Corps of Engineers.

Overall statistical growth projections are meaningless to a specific port such as Escanaba, unless it can particularize itself as an area where that growth will occur. That, of course, requires study of the port's individual potential.

Given the time and financial constraints, the present Little Bay de Noc Management Program cannot of itself lead to the immediate development of a cargo facility. A project of that magnitude will require some time and detailed engineering before it is on the ground. An application for a Port Expansion Study was submitted by the county for 1981 Coastal Management funds. The work of the Technical Advisory Committee gave application substance and justification for expenditure of public funds. As of the time of this final report, the study

had been funded and will proceed. The final work will, therefore, be possible in a timely fashion after this study.

At the first TAC meeting, the form an eventual authority for operation of the facility may take was discussed as well as potential methods for financing the facility. It was suggested that an amendment to the articles of the Delta County Building Authority may be possible to allow it to engage in this operation. This was the first alternative researched by staff.

The Delta County Building Authority is a public corporation organized pursuant to Act 31 of the Public Acts of 1948. That statute provides authority to construct and operate a community building or center and adjoining parking facilities. It does not, however, provide for construction of a commercial/ industrial facility of the type envisioned. Thus, the County Building Authority is not itself a legally sufficient vehicle for development of a cargo facility. There are several statutes providing different options for the potential development of a cargo facility. The choice, when made, will be dependent upon the desired method of operation and control (private, governmental, or mix of the two) and the desired or possible methods of finance. Three major options are discussed below.

Economic Development Corporations Act, Act 338, P.A. 1974

A "project", as defined in Section 3(e) of this act, may include ". . . land and existing or planned improvements suitable for use by any industrial or commercial enterprise . . . including necessary buildings, improvements, or structures suitable for and intended for or incidental to use as an industrial or commercial enterprise, including industrial park or industrial site improvements and port improvements . . ." Thus, there is ample authority under this statute for the development and financing of a cargo facility.

Both Delta County and the City of Escanaba have active Economic Development Corporations. Financing and development through an E.D.C. is a familiar process in this area. The Mead Expansion Project, to name one major example, is utilizing County E.D.C. authority and bonding. The financial savings and development potential through sale and lower interest on E.D.C. bonds has thus already been demonstrated locally. The statute provides wide flexibility in financing and in operation as the E.D.C. may lease or sell all or part of an eventual facility. On the basis of experience and local familiarity, this is certainly an important option for future consideration.

Revenue Bond Act, Act 94 P.A. 1933

A "public improvement", as defined in Section 3(b) of this statute, includes ". . . yacht basins; harbors; docks; wharves; terminal facilities; elevated highways; bridges over, tunnels under, and ferries across lakes or any part thereof . . . marine railways; or any right or interest therein. The term 'public improvement' shall be construed to mean the whole or any part of any one of the above named improvement or of any combination thereof, as determined by the governing body . . ." Obviously, this statute also provides ample authority for a general cargo facility.

The Revenue Bond Act enables the development of the above improvements by a "public corporation" which is defined to include ". . . any county, city, village, township, port district . . . or any combination thereof when authorized by law to act jointly, or any authority created by or pursuant to an act of the legislature." The Urban Cooperation Act, Act 7 P.A. 1967, essentially provides that any power local governments may exercise individually, they may exercise jointly and may, if they desire, create a new authority composed as they may agree. Thus, under this combination of legislation, a single local government or any combination may develop and finance a general cargo facility. Act 7 has recently been used in this region as the legal basis for township associations and for water, sewer, and solid waste authorities. This option would provide great flexibility in development, operation, and control of the facility.

Despite its name, the Revenue Bond Act also provides great flexibility in methods of finance. Section 4(e) of the statute provides that: "The powers in this act granted may be exercised notwithstanding that no bonds are issued hereunder." Thus, grant or taxes or a combination of the two may be utilized if preferred. Revenue bonds may be issued under this statute without a vote unless the option to pledge full faith and credit behind the bonds was taken, at which time an election would be required. This option, therefore, also provides great overall flexibility and would be another method to seriously consider. The chief difference between proceeding under the Revenue Bond Act as opposed to an E.D.C. would be the greater governmental involvement and control under the Revenue Bond Act.

Port Authority Act, Act 639 P.A. 1978

The term "port authority" has often been used in discussions of a possible general cargo facility and it is useful at the outset to specify, to some extent, the present legal meaning of that term in Michigan. Act 639 repealed the former Port District statute except insofar as it pertains to existing port districts. Any new "port authority" created in Michigan would be developed under Act 639. The formation and powers of a port authority under this statute are outlined below:

Formation:

1) A city and county, or a combination of counties or a combination of cities and counties, by joint resolution, requests the governor to authorize incorporation of the Authority.

2) Initial Articles of Incorporation and any amendments must be approved by the governor and filed with the Secretary of State.

3) The Authority shall have 5 or 7 members serving staggered 4 year terms. One member is appointed by the governor and the remaining number is set and chosen by agreement of the incorporating units as set forth in their joint resolution.

4) Members select their own officers and are not compensated except for actual travel and other expenses incurred as members.

Powers:

1) The Authority is a "body corporate and politic" which may sue and be sued, own and dispose of property, hire employees, accept grants, and contract.

2) Its powers, though restricted to port facilities or projects, are very broad in that regard encompassing anything from dredging and filling channels to developing wharves, piers, storage, and transport facilities or industrial districts, and the powers to promulgate rules, rates, and charges for its facilities.

3) The Authority may contract with private parties or with governmental bodies who may pay their contract obligations through taxes, service charges, special assessment, or any other available monies.

4) The Authority possesses the power of condemnation of land for its purposes and facilities.

5) The Authority may issue revenue bonds upon approval of the Michigan Municipal Finance Commission, but may not indebt another governmental unit except by contractual agreement.

This option envisions the creation of a local authority with its own governmental and corporate powers. Local governmental power over it would be largely maintained by the method of naming or removing members. Again, under this option, a wide variety of financing arrangements is possible.

A final option would, of course, be totally private development and operation of a cargo facility. It is possible that a private enterprise operation will be the outcome of the study. Financial savings, however, would indicate that private development would initially utilize one of the first two options.

The Transportation/Commercial/Energy Subcommittee of the Technical Advisory Committee spent the greater part of its discussions on the issue of establishing a cargo facility in Escanaba. Mr. Roy Jensen, who had served on the original Escanaba Port Authority, provided a history of the authority and shipping opportunities in the bay. The Technical Advisory Committee has on file the correspondence and documents detailing activities of the city and port authority at that time. Discussion was also had with local manufacturers and with state Department of Transportation personnel. A cruise of the bay and discussion on potential sites was also made. Based on the work to date, the following recommendations and findings are made:

- A new Port Authority under the 1978 Port Authority Act should be established to be the focal point for in-depth engineering/traffic studies and development of facilities. A Port Authority is the best of the above alternatives.

- The Port Authority should be created and represent the City of Escanaba, the City of Gladstone, and Delta County. The enabling legislation does not provide for township representation, but the county's appointment should be someone from an area to be affected.

- In the interim period between local establishment and state approval, the Authority should be an acting Harbor Commission with organization and membership that could easily transfer to a Port Authority.

- The best sites for any new dock facilities would be adjacent to the Reiss dock on the submerged pilings or on C&NW land along the north shore of Escanaba. A river mouth area, such as that of the Escanaba River or the Days River, would involve the project in major environmental questions that would probably indefinitely delay or halt the project.

- Primary emphasis at the early stages should be upon the development of a bulk facility based upon the apparent and projected economics of shipping in the Great Lakes.

- A general cargo facility should be considered over time if it becomes feasible or in conjunction with the bulk facilities.

Bulk cargo includes such items as coal, fuel, or wood chips. General cargo would include packaged shipped materials such as containerized cargo. The above findings are based on a preliminary review of what new port facilities in Escanaba could expect to have as a base. A small percentage, approximately one hundreth, of the over two hundred million tons shipped annually in the Great Lakes is general cargo. Most of that, according to available studies and experts, finds its way through the major ports of Milwaukee or Detroit. Profit on a general cargo facility runs at approximately 2%, one dollar a ton being considered good. Given the fact that both governmental and private funding for such projects is tight presently, it is doubtful the necessary funds could be raised for that sort of facility. There would not simply appear at this time to be sufficient "general" cargo in this area to profitably stop general cargo ships on the lake and compete with established routes and trade arrangements.

Bulk cargo is another story, for here a future of increased shipping is bright. The Michigan Seagrant Program is, for example, about to study the feasibility of shipping western coal eastward via a port like Escanaba as opposed the present use of Duluth. Coal shipments on the Great Lakes have reached 40 million tons annually and this may grow to as much as 135 million tons annually by the year 2000 as the increased use of abundant, "cleaner" western coal continues. The rail connections and lake location of Escanaba make it an ideal port for this development. In addition, indications presently are that other bulk items such as wood chips or agricultural products could profitably be shipped through Escanaba. The bulk potential in specific should provide the first agenda item for the new Port Authority.

COMMERCIAL/INDUSTRIAL

Specific data for the Little Bay de Noc area itself has never been compiled and surrounding county and regional factors impact to the extent that that data, rather than merely a bay compilation, must be considered when developing commercial/industrial issues and opportunities for the bay. For background purposes, Delta County and regional/state statistics are presented. Three main issues providing the focus of the commercial/industrial section of the management program may be outlined as follows:

1. Industrial/Commercial sites along the bay.
2. Agricultural/Timber production possibilities that would use the bay as a shipping port.
3. Tourism accommodations and facilities.

Following the statistical data presented below, each of these issue areas will be reviewed. Potential commercial/industrial enterprises must consider local population projections as well as distant markets for new goods. The following data on units surrounding the bay and the county as a whole was derived from 1970 census counts and 1975 state estimates supplemented by reported housing permits, water quality management survey statistics, and established trends. The 1980 census may provide more accurate data, but the numbers will likely be close.

	Census Count	Projected Population		
Local Unit	1970	1980	1990	2000
Bay de Noc Township	312	380	425	460
Brampton Township	737	1,100	1,350	1,500
Ensign Township	505	665	775	840
Escanaba City	15,368	15,500	15,500	15,500
Escanaba Township	1,948	3,080	3,870	4,400
Ford River Township	1,762	2,507	2,950	3,340
Gladstone City	5,237	5,060	5,000	5,000
Masonville Township	1,409	1,990	2,400	2,640
Wells Township (include Wells Place)	4,003	5,846	7,150	7,910
Wells Place	(1,085)	-	-	-
Delta County	35,924	41,900	46,000	48,700

Thus, the projection would be continued moderate growth around the bay. Past statistics on per capita income, total business establishments, etc., might normally be considered useful in establishing a trend for the coming years. However, recent severe inflation, the rise in fuel prices, and the potential for recession/depression make economic projections based on past data rather shakey. In order to get some idea of the Delta County situation and how it compares to adjacent counties, the following background tables are provided. More recent and bay specific data is presently being compiled.

Estimate Per Capita Income

County	1970	1975	% Change 1970-1975
Alger	$2,593	$4,261	+64.3
Delta	3,120	4,468	+43.2
Dickinson	3,171	5,303	+67.2
Marquette	3,237	5,036	+63.9
Menominee	2,813	4,344	+54.4
Schoolcraft	2,785	4,237	+52.1
Central Upper Peninsula	2,953	4,608	+56.0
State of Michigan	4,180	6,169	+47.6

Source: Bureau of Economic Analysis, U.S. Department of Commerce, 1977.

Labor Force 1960-1977
(By Place of Residence)

County	1960*	1970*	1975**	1977**	Total Increase Since 1970
Alger	2,945	3,005	4,150	4,625	53.9
Delta	11,640	12,244	16,100	16,625	35.8
Dickinson	8,444	8,197	10,525	11,375	38.8
Marquette	18,952	24,250	26,650	32,525	34.1
Menominee	8,528	8,725	10,700	10,475	20.0
Schoolcraft	3,024	2,630	3,325	3,425	30.2
Region	53,533	59,051	71,450	79,050	38.8

Source: *Census of Population, 1960 and 1970.
**MESC, Employment and Labor Force Estimates.

Percentage Unemployment Rates 1960-1977

County	1960*	1965*	1970*	1976**	1977**
Alger	12.9	N/A	8.7	13.7	15.0
Delta	9.1	7.0	10.2	8.8	10.8
Dickinson	8.9	6.5	7.6	7.9	7.7
Marquette	7.9	5.2	6.5	7.8	8.7
Menominee	6.2	4.9	6.1	6.5	6.9
Schoolcraft	16.7	N/A	13.8	10.5	13.1
Region	8.8	6.2	7.8	8.2	10.4
State of Michigan	6.9	3.9	7.0	8.9	7.8
United States	5.5	4.5	4.9	7.4	7.8

Source: *CUPPAD, Employment and Earnings in Perspective.
**MESC, Employment and Labor Force Estimates.
***MESC, Employment and Labor Force Estimates.

Total Business Establishments and Payrolls
by County, 1968 and 1974

County	1968 % of Firms	1968 Payrolls*	1974 % of Firms	1974 Payrolls*
Alger	147	8.108	199	9.264
Delta	687	30.752	776	85.042
Dickinson	527	26.332	619	64.620
Marquette	973	63.516	1,135	112.084
Menominee	432	22.628	483	39.819
Schoolcraft	183	6.276	227	11.087

*$'s in millions.

Source: County Business Patterns, 1968 and 1974.

Percentage Occupational Groups by County

	Alger	Delta	Dickinson	Marq.	Men.	School.
Professional and Technical	12.9	10.9	13.3	15.1	9.8	11.0
Farmer and Farm Laborers	5.6	2.0	1.6	0.5	7.2	1.5
Managers and Proprietors	5.4	10.2	9.2	7.0	5.6	12.9
Clerical and Sales	15.6	20.7	20.8	22.7	15.8	16.5
Craftsmen	14.1	14.5	16.9	14.0	16.0	13.3
Operatives	20.2	16.1	17.1	13.2	21.7	11.2
Drivers	4.4	5.2	5.6	4.9	4.9	4.9
Service	13.0	13.5	13.9	17.0	12.0	18.8
Laborers	8.4	5.8	4.7	4.0	6.1	8.4
Household	0.3	1.0	0.8	1.3	0.7	1.4

Source: U.S. Census of Population, 1970.

INDUSTRIAL SITES

The need for available land for manufacturing and distribution industries generally involves two types: industrial parks and individual sites, usually in established industrial areas. Both the industrial parks and single sites are concentrated within the larger communities adjacent to water and sewer services, electric or natural gas connection, and the rail and road network. Industry in the Little Bay de Noc area is thus concentrated along the Escanaba/Gladstone corridor and is close by the bay.

Since about 1920, a number of communities have developed industrial parks, some utilizing various federal funding sources. In most of the cases, the industrial parks were successful for expanding local firms, attracting some new industries, and in rationalizing the local land use patterns. The regional industrial park situation is depicted in the following chart:

Industrial Parks

Industrial Parks	Community	Approx. # of Firms	Approximate Remaining Acreage
Iron Mountain	Iron Mountain	15	40+
Kingsford	Kingsford	12	160+
Norway-Vulcan	Vulcan	2	200
Menominee	Menominee	5	40-160 Future Use
Escanaba	Escanaba	5	8
Red Pines	Escanaba	2	55
Gladstone	Gladstone	9	0
North Bluff	Gladstone	1	96
Reynolds	Marquette	8	0
Hematite	Ishpeming	8	10-15 Future Use
Ishpeming	Ishpeming	7	35
Midway	Negaunee Twp.	7	15
Tri-City	Marquette Twp.	4	0
Manistique	Manistique	0	30
Munising	Munising	0	40 (in planning)

Escanaba

Recent Regional Commission work for the Escanaba Foundation provides a basic examination of potential industrial site expansion of development. Three general areas studied are outlined below and depicted on the accompanying map:

Area I

Description of Area: The "Bosk-Bichler" property adjacent to the Sportsman's Club property identified as parcels A, B, and C on the map.

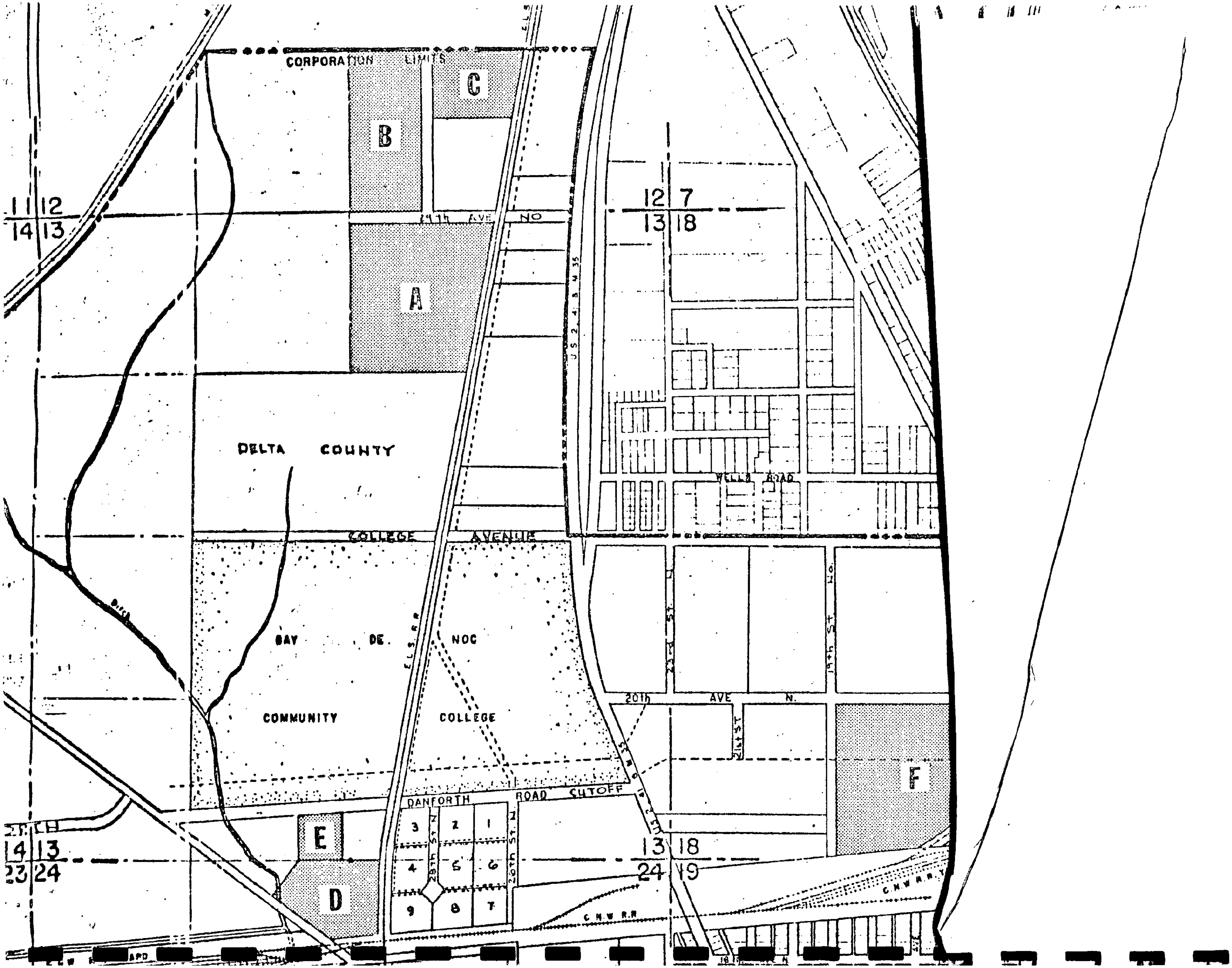
A. Physical Features

1. Soils: There are four soils in the northern area of the city. Two are unsuitable, consisting of peat muck, and two are high quality sands. The three parcels shown on the attached map are located on these suitable soils.

2. Drainage: The drainage of the entire area is poor. In the unsuitable soils area the water table is at or near the surface. For the suitable soils, being sand and flat, they have rapid permeability and slow runoff. However, being that separate storm sewerage would be required in almost every location, the runoff problem is solvable.

3. Topography: The area of good soils is quite flat with slopes of 0 to 4°. This presents no difficulties for construction.

4. Flood Hazard: Because of being so flat and that the unsuitable soils area is prone to flood, the western third of the suitable soils area is included in a flood hazard area. However, a new flood hazard study of the area has just been completed, but not published. It is anticipated that it will conform closer to the soils boundary.



CORPORATION LIMITS
A
B
C
D
E
F
DELTA COUNTY
BAY DE NOC
COMMUNITY COLLEGE
COLLEGE AVENUE
24th AVE NO
DANFORTH ROAD CUTOFF
E.L.S. R.R.
C.N.W. R.R.
US 2, 41 & M 35
20th AVE N.
23rd ST
21st ST
19th ST NO
28th ST N
26th ST N
WELLS ROAD
11 12
14 13
12 7
13 18
14 13
23 24
13 18
24 19
1
2
3
4
5
6
7
8
9

B. Man-Made Features

1. Water and Sanitary Sewer: Currently a 10-inch water main and a 15-inch sanitary sewer run along to the Holiday Inn property with spurs connecting to the Delta County Building. These would provide adequate service to most industrial users of an industrial park. In addition, a major sanitary sewer is proposed to run across the area to the Soo Hill community at a later date.

2. Rail: As can be seen from the map, direct access to rail service can be provided by one or more spurs from the E&LS rail, which serves as the eastern boundary of the area. It would also be possible to run a spur from the Soo Line (upper left corner of the map) to serve and/or all of the three parcels shown.

3. Access: Twenty-ninth Avenue North provides road access to the area.

4. Utilities: Power and phone lines currently run along the E&LS rail route. The power delivery available appears adequate, but a higher than average power user could necessitate additional service.

5. Ownership: The current ownership of the study area involves the city, Delta County, the Sportsman's Club, and Mr. Bosk.

C. Industrial Rail Park Development Options

1. Parcel "A": This piece of property is 65 acres and is owned by the city (part of the upper two "40's") and the county (part of the lower "40's"). Access could be provided either by a road connector running south directly to the end of College Avenue, or out along 29th Avenue North, or by both routes. Rail access is provided by the E&LS.

2. Parcel "B": This parcel is also owned by the city and county, but is only 16 acres. This could be developed as a "micro" park, using small lots or a few larger lots. Access could be provided by a connector either directly to US-2 & 41 or north to the road that served the old "poor farm". Rail service would be from the E&LS.

3. Parcel "C": Parcel "C" is 40 acres and is solely owned by the Delta County Sportsman's Club. Access could be provided along the north side by a road that would connect with the "poor farm" road or directly with US-2 & 41 through parcel "B". Access could also be provided through 24th Avenue North, or by both the north and south routes. Rail access to this parcel would be easier from the Soo Line. Ownership would be the major constraint on this property.

4. Combinations: Parcels "A" and "C", or "B" and "C", or all three parcels can be combined into an industrial park development. In addition, the privately owned parcels owned by Mr. Bosk and by Bichler Brothers, could also be brought into such a development.

The major advantage of such a combination would allow staging of the development over a number of years, hence spreading out the development costs and allowing better flexibility and control of development. The advantages of including the two private owners, especially Mr. Bosk, would be unification of development and control, and improved staging.

D. Other Considerations

The decision-making issues that now need to be considered are: Is the area to be used for industrial/commercial development or for some other single land use? If the answer to that question is yes, then the following issues will have to be considered:

a. The level of participation desired by the current owners: city, county, Sportsman's Club, and the two private landowners, Mr. Bosk and Bichler Brothers.

b. The size and scope of the park.

c. Whether the park will be developed in stages, and their timing and size.

Area II

Description of Area: Examination of the properties that are owned by the City of Escanaba and the Escanaba Foundation along Sheridan Road depicted as Parcel F on the map.

A. Physical Features

1. Soils: The area is covered with the same four soils of the other study site. Two are high quality sands, quite suitable for construction. The other two are unsuitable mucks. In addition, two other materials have been dumped in the area. One is residue from American Cyanamid. This is apparently filled into a gully in the Rubicon sand. The other fill, consisting of rubble and stump materials, is being dumped onto the two mucks.

2. Topography: The area slopes from west to east with some of the area requiring additional grading and filling.

3. Drainage: Because of the slope and the soils, the drainage is from west to east but held by the barrier caused by Sheridan Road. Additional fill in the muck areas and storm sewerage will be required.

B. Man-Made Features

1. Water and Sanitary Sewer: Water service for the sites is excellent with a 16" main on the uphill side of the property. Sanitary sewer service is not available.

2. Rail Service: The property is bounded on the south side by Chicago and North Western tracks. Additionally, it is traversed by one of

the tracks. This track is at grade level with the property, and sidings could be developed from it to any point on either parcel.

3. Access: Road across from 20th Avenue North and Sheridan Road is more than adequate. Cul-de-sacs from 20th Avenue similar to the pattern in the current industrial park would be better for the city property.

4. Utilities: Adequate power traverses the city property. The right-of-way for the city's high voltage lines prevents structures being built underneath, however.

5. Ownership: The property south of 20th Avenue North is owned by the city. The Escanaba Foundation owns the property north of that avenue.

C. Developmental Options

1. Developing the two parcels as a single small industrial park of approximately 50 acres. Access could be improved by installing cul-de-sac streets into each of the properties and continuing to fill and grade. However, the power line right-of-way limits use by prohibiting structure construction underneath.

2. The Foundation has a plan of subdivision for its property. Continued filling and grading could make the site more attractive. After the filling, the largest loss could be subdivided by means of a cul-de-sac from College Avenue. Providing water service should be relatively inexpensive since the main is in under 19th Street. Sanitary sewer service would be more difficult since no lines serve the area east of the highway and north of the Chicago and North Western yards. The alternatives would be to run an 8" sewer line along Sheridan Road to 16th Avenue North or to use individual septic systems. Storm sewerage could be run under Sheridan to the Chicago and North Western property and south to their outlet.

3. Use of the city property not restricted by the power lines could be made possible by use of cul-de-sacs or by a new street forming an angle across the property connecting Sheridan Road with 20th Avenue North. The water and sewer conditions are the same for the Foundation's property.

The use of available "free" fill should be continued in both areas in the short-term. Materials such as fly ash from the city's power plant can be very useful as long as the necessary land fill requirements are met.

Area III

Description of Area: Examination of the City of Escanaba's property along the bay front, north of the Chicago and North Western Ore Dock, and land owned by the Escanaba and Lake Superior Railroad in Wells depicted as parcels G and H on the map.

A. Physical Features

1. Soils: The soils in this study area are more complex than in the other locations. The Tawas and Carbondale mucks are ammendable to improvement by filling and grading, but at some cost. The Croswell sand provide an excellent construction base. The AuGres sand tends to be unstable. It will flow when wet and unconfined. The alluvial deposits (river sands on map) vary greatly in height, composition, and degree of consolidation. Since they were produced by the river and its meanderings and delta development processes, the various sands and gravels are probably interbedded resulting in a very unstable surface. In addition, unless the river channel is stabilized, the future course of the river will continue to change. Prior to use, a very detailed soil survey will be necessary. The marsh area or the island is so low that unless it is filled in and stabilized, it will grow and contract as the river meanders.

2. Drainage: The two sands have rapid permeability and slow runoff. The slopes are not enough to insure reasonable runoff rates, and storm sewerage must be considered to improve these characteristics. The two mucks will definitely require some storm sewerage if filled. The alluvial deposits probably have a large variance depending on particle sizes of the various beds.

3. Topography: Most of the area is flat. The AuGres sand, however, has a slight slope that can result in some soil movement if not artificially drained or confined. The river sands are "bumpy" due to their unconsolidated nature. Unless stabilized and partially filled, it will continue to settle haphazardly.

B. Man-Made Features

1. Water and Sanitary Sewer: The area inside the city limits is served by 6" or 8" water lines. The E&LS property is served by a small private unit line. A larger capacity line would have to be installed if the property were to be developed. Sanitary sewer service is not available.

2. Rail: The area is crossed by several sets of track and sidings. Some potential lots have rail sidings, for other potential lots, rail service would not be available since the tracks are not at gradient or are for use of the ore handling operation.

3. Access: The current road access is poor. It is unpaved and narrow. Some areas are virtually land locked by tracks. The island has no access at all except by boat. A replacement for the old Sheridan Road bridge would have to be a part of any development program for the island.

4. Utilities: The municipal power plant is located in this area. Distribution would present no difficulties. However, the power line right-of-way prohibits construction of buildings in some of the area.

5. Ownership: Currently, the ownership is divided among the city, the E&LS Railroad, and Mr. T. D. Vinette. Mr. Vinette is also leasing a portion of the city's property for a boat shed. Standard Oil and the Escanaba Coal and Docks Company are also owners.

C. Development Options

1. Continue to allow ad-hoc industrial development to proceed on a moderately slow pace.

2. Induce the city to pave the current roads and install additional water service, thereby to make the current parcels more attractive.

3. Combine these parcels with the parcels on Sheridan Road as heavy industrial sites in a coordinated improvement program.

The above descriptions should provide a basis for consideration of future industrial site locations. Utilizing the bay atlas, the transportation materials on a cargo facility, and the appropriate environmental considerations, an overall industrial/commercial proposal for the bay may emerge.

Gladstone

With the filling up of its present industrial park, Gladstone has turned to the development of a North Bluff industrial park of approximately 100 acres. The development of this park will impact industrial/commercial development along the bay and may provide ready customers for a general cargo facility. Construction is presently underway for the A&W Manufacturing Company, and there are two prospective businesses. Grant applications for road, water, and electric extensions are presently pending with the federal Economic Development Administration and the Upper Great Lakes Regional Commission. This park's potential needs to be further explored and documented and consideration given to it in the overall bay strategy.

AGRICULTURAL/TIMBER PRODUCTION

Recently, attention has been given to the potential for increased agriculture production and shipment out of the area via the Escanaba port. The larger part of this section of the management program will be based upon information to be developed in conjunction with the Michigan State Extension Service.

In the past, the number of farms and total acreage in farming has been declining in Delta County as it has throughout the area. The following table illustrates this fact:

Farms and Farm Acreage 1964, 1969, and 1974

County	Number of Farms			Acres of Land in Farms		
	1974	1969	1964	1974	1969	1964
Alger	95	104	148	20,674	25,146	32,263
Delta	331	373	526	95,361	101,542	117,155
Dickinson	157	162	197	38,760	39,749	43,763
Marquette	96	97	139	27,177	27,393	41,943
Menominee	515	594	923	146,753	162,239	208,215
Schoolcraft	49	54	97	15,556	14,835	18,083
Region	1,243	1,384	2,030	344,281	370,904	461,422

Source: U.S. Census of Agriculture, 1964, 1969, and 1974.

Major crops in the Delta County area have, in the past, included hay, oats, corn, potatoes, and dry beans. Recent data in these areas and the barley production potential is being collected to be included in the report as potential items for shipment from the bay. Data and a full discussion of timber products and the potential for shipment is now being compiled and will await TAC review of state and federal (Hiawatha) plans as well as local industrial options. Present issues and opportunities relative to the Little Bay de Noc study include:

- Potential for agriculture and timber products shipments via the bay port facilities.
- Difficulties and loss of acreage facing agricultural production.
- Potential for new facilities along the bay utilizing production of these resources.

TOURISM

Available land for tourism and economic development is going to be in either of two types of locations. The first is along the Escanaba/Gladstone corridor for multi-purpose lodging and/or restaurant facilities. The second is the rural or specialized activity site. Future prospects for tourism are uncertain due to the rise in gasoline prices and its effect on travel. Tourist accommodations and needs are directly related to recreational facilities development which is discussed in more detail in a previous section of the report. The Delta County Chamber of Commerce has recently completed and published an inventory of restaurants/accommodations along the bay area. Data from a 1977 tourist industry study is presented on the following page. Present issues and opportunities may be summarized as follows:

- Potential responses to a tourist downturn including a switch to more long-term accommodations and possible mass transit to the area.
- Completion of the Holiday Inn on M-35.
- Potential for increased recreational fishing on the bay and promotion of special bay events such as sail boat regattas, fishing derbies, etc.

Tourism Industry Characteristics

Establishments	Alger	Delta	Dickinson	Marquette	Menominee	Schoolcraft
Year-Round Est.	27	45	24	35	15	19
Total Rooms	274	785	430	944	188	286
Average Rate	$14.20	$13.54	$15.42	$19.24	$11.05	$19.42
Seasonal Est.	38	24	5	18	8	56
Total Rooms	289	122	33	171	40	367
Average Rate	$15.75	$15.69	$12.76	$17.48	$13.58	$14.77
Total Expenditures ($'s in Thousands)	$5.049	$26.592	$20.870	$26.256	$4.039	$13.464
Travel Generated	164	861	676	851	131	436
Personal Income	$1,395	$7,350	$5,768	$7,257	$1,116	$3,721
% of Total Personal Income	3.90%	4.14%	4.33%	2.13%	1.03%	11.09%
% of Total Employment	4.72%	6.07%	7.12%	3.28%	1.34%	15.43%

Source: Tourist Industry Growth Study, Travel Bureau, DOC, Michigan, 1977.

ENERGY

Current Status

Until recently, the topic of energy generally merited scant attention in the development of a plan. Now, the amount and type of energy available is a critical factor in any study considering commercial, residential, or industrial growth or a project such as a general cargo facility. Because both present and potential energy facilities are adjacent to the bay and directly affect it, their consideration is a logical and necessary part of a bay management program.

Unfortunately, truly reliable data on overall energy use and probable need is too often unavailable. Most such information has been collected only recently, if at all. Some data that is collected by government agencies from corporate users is also unavailable in the sense that it cannot be reported directly. In a rural area with few suppliers, the problems of disclosure of confidential information and the fact that service areas don't generally follow political boundaries further hampers data collection. Past use and potential need are also dependent on variables such as weather, tourist fluctuations, and new industry or process on line at a particular time. Thus, the reliability of data runs the gamut from the very reliable estimates on electric and natural gas usage through much less reliable information on gasoline, fuel oils, and diesel fuel to the guesstimate approach to wood usage.

The three sources utilized by the CUPPAD Regional Commission to date include: 1) A 1972 data study by the Brookhaven National Laboratory derived from national, state, and local data; 2) Michigan Energy Administration analysis on an annual basis for the years 1976 and 1977; and 3) Local information gathered by Regional Commission staff. Despite the potential inaccuracy of energy predictions, a fairly accurate picture augmented by contact with local officials and suppliers, such as WEPCO, can be presented for a general review of significant issue areas. Five issue areas: Electricity, Natural Gas, Other Petro Fuels, Coal, and Alternate/Wood Energy Potential are discussed in some detail below.

Electricity

Electric generation and service in the Little Bay de Noc area derives from four sources: Escanaba municipal system, Mead Corporation mill (Mead generates its own electric needs by natural gas), Alger-Delta Electric Co-Op (serving the northern bay and Stonington Peninsula), and the Upper Peninsula Power Company, UPPCO, (to whose power grid the municipal and Co-Op systems are linked). The City of Gladstone did operate a coal fired 6,000 KW system. The city has ceased operation of their power plant as a result of air pollution requirements. Power is supplied to city residents by U.P. Power Company. Total electric consumption and growth in Delta County with comparison to adjacent counties is presented in the table below:

Total Electricity Consumption, 1976-1977
in 1,000 KWH

County	1976	1977	% Growth
Alger	771,640	773,270	2.2
Delta	451,370	522,380	15.7
Dickinson	387,050	395,700	2.2
Marquette	528,610	503,580	-4.7
Menominee	186,760	200,910	7.6
Schoolcraft	132,190	152,070	15.0

Source: MEA Fuel Demand Report.

The Alger County statistics reflect the Kimberly Clark mill use and the decrease in Marquette County is probably accountable to the iron strike affecting 1977. In Delta County, the growth in demand is due to the expansions at Harnischfeger and rapid increases in residential growth.

The City of Escanaba operates a coal fired 25,000 KW plant. The recent successful bond issue will enable the city to install pollution control equipment which should bring the plant into compliance with EPA/DNR air pollution control regulations. The plant has been in violation of those regulations resulting in the immediate area being classified as a "non-attainment area" which could have constraining effects on area development. The bond issue does not address power generation and that presents the immediate problem.

Demand on the Escanaba system is expected to reach its capacity at about 1985. Contracts between the city and UPPCO providing for electricity from the latter could extend that critical date to 1988. However, the problem is clearly one requiring positive action in the near future.

Two possibilities are presently being explored by the city in light of the uncertainty surrounding WEPCO's Ford River plant plans. The first is expansion of the present plant through addition of a diesel fueled "peaking unit" that would operate during periods of high electric demand. The second is a 5 to 6 million dollar power line extension from Escanaba to Iron Mountain which would provide linkage into UPPCO electric power for future needs. A perceived advantage for the power line extension concept is that it could be utilized to transfer power from as well as to Little Bay de Noc which would be a great asset should a WEPCO plant come into reality. The power line extension would appear to be the favored alternative at this time.

One problem area for the City of Escanaba is plant age and size. The plant is more than 30 years old, and considered short of peak power capacity. For UPPCO, Escanaba, and the Alger-Delta Electric Co-Op, some new distribution lines will be necessary, but are not expected to require significant new rights-of-way. The municipal owned system is funded through bonds and thus face a severe financial problem for expansion. There is a need for technical and financial assistance for the system from other sources.

The electric supply situation surrounding Little Bay de Noc thus may be viewed as a limiting factor to growth and as an area requiring immediate and continuing attention. It is equally clear that the systems are joined together in a power grid and solutions are interdependent. One overall approach to providing sufficient electric supply will likely emerge in the near future. Any consideration of new commercial/industrial facilities would be incomplete without review of this problem area.

One perceived potential solution to power needs is the on again, off again plan of WEPCO to construct a power plant in the Ford River area close to Little Bay de Noc. At present, plans to construct either in Ozaukee County, Wisconsin, or Ford River Township have been delayed. Reduced peak demand forecasts have allowed WEPCO to plan construction of the plant for the early 1990's instead of 1987, as previously announced.

This timetable seems to assume WEPCO's ability to proceed with its nuclear construction program in a timely manner. It also assumes that demand forecasts will not change. Such forecasts have been characterized by unexpected changes since the early 1970's.

New advance plans still indicate that both sites will eventually be chosen as plant locations. However, a company decision cannot yet be considered final. Such a decision would also not guarantee success in the permit process or eventual completion by a set timetable.

The potential construction in Ford River Township is, to say the least, a controversial issue in the Little Bay de Noc area. A 400 MW plant is proposed and an idea of its size may be gained from the fact that Escanaba and Gladstone combined potentially produce 31 MW's at present. The plant's annual consumption of coal is estimated at about 240,000 tons. A WEPCO plant of that size would, of course, be a regional power source providing a service area stretching well beyond the Little Bay de Noc area. The effects of the plant, both on communities and the environment, would primarily be felt locally and there are differing opinions on the balance that would be struck. Full analysis and response to its impact awaits some final decision by WEPCO.

Natural Gas

Natural gas into the area generally comes from the field of the Permian Basin in Texas through northern natural gas lines. The Little Bay de Noc area is primarily served by the Michigan Consolidated Gas Company. The natural gas serving this area is regulated in price by the U.S. Interstate Commerce Commission and most of it is "old" gas from wells in production prior to 1974. Gas price deregulation is not expected to have a large effect on natural gas prices in the next three to five year period, but this is a business presently prone to surprises and uncertainty. The price fluctuates and, although there is ample natural gas at present in the area, it is not safe to plan ahead on an assumption that it will continue. Use of natural gas, as discussed below, is also under federal regulation. Michigan Energy Administration estimates on natural gas consumption in selected counties, for comparisons, follow.

Total Natural Gas Consumption, 1976-1977
in Million Cubic Feet

County	1976	1977	% Change
Alger	400	387	-3.3
Delta	8,393	8,523	-1.7
Dickinson	2,986	2,928	-2.0
Marquette	16,642	21,092	+12.7
Menominee	1,797	1,639	-9.1
Schoolcraft	655	585	-10.3

The downturns are a reflection of a milder 1977 winter and some conversion to other fuels.

Percentage Natural Gas Use by County, 1976-1977

	1976		1977	
County	Residential/ Commercial	Industrial	Residential/ Commercial	Industrial
Alger	100.0	0.0	96.9	3.1
Delta	22.8	77.2	22.1	77.9
Dickinson	58.9	41.1	57.1	42.8
Marquette	10.6	89.4	8.4	91.6
Menominee	67.4	32.1	66.8	32.6
Schoolcraft	91.6	8.4	90.5	9.5

The high industrial use figures for Marquette and Delta Counties reflects natural gas use to bake iron ore pellets and in Delta, Mead Corporation's use as a principal fuel for its boiler system. For some very excellent reasons, the Mead Corporation project contemplates use of a coal/wood system.

There is currently no shortage of natural gas for the area. Natural gas service is under federal allocations and regulation, however, essentially requiring:

- Gas service to communities not currently having gas service is precluded.
- For those communities with gas service lines, extensions are possible, but use guarantees and deposits are required until there are sufficient customers on an extension to pay its cost.
- A company serving the area may acquire new residential, commercial, or industrial customers, but:
  - -- New industrial customers may not use the gas for either drying operations or as a boiler fuel. Space heating and any process is allowed, but again:
  - -- New industrial users face daily and annual maximums, depending on the type of service.

The bottom line for the Little Bay de Noc program is that natural gas, for a variety of reasons, will not be the fuel of the future for growth. Conservation and conversions will be more likely than expanded use. Coal and wood appear to be prime in industrial and electric consideration and this fact, barring some new Alaskan supply, will have significant impact on potential port traffic and facilities.

Other Petro Fuels

Data on gasoline, diesel, fuel oils, and bottle gas is much more sketchy than the figures above. There are three sources for these products to or through the Little Bay de Noc area:

- The Lakehead Pipeline cutting west to east with a breakpoint at Rapid River. The only product delivered is Number 4 grade, equivalent fuel oil, destined for CCI to the north.
- Outside pipeline and tanker terminals, predominantly Green Bay. The local wholesalers, for Mobile and Texaco products, receive shipments by truck from there.
- Tanker to the port facilities along the Escanaba/Wells/Gladstone area whose 1977 terminal fuel capacities appear below.

Tanker Terminal Fuel Capacities
by Fuel Type, 1977 as barrels

	Marathon Gladstone	Citgo Gladstone	Amoco Escanaba	Shell Escanaba	Bay de Noc Gladstone
Regular Gas	51,500	129,000	80,000	67,500	26,000
Premium Gas	14,000	19,000	31,000*	14,500	
No Lead Gas	14,000	36,000	53,000		
No. 1 Fuel Oil	19,500	60,000	53,000	55,000	
No. 2 Fuel Oil	53,000**	285,000**	80,000	82,500	100,000**
Diesel			54,000		

*Amoco premium is also no lead.
**Some of this fuel oil is also used as diesel fuel.

Figures on use are difficult to come by and their accuracy may certainly be questioned. Among the problems in data collection:

- End use is seldom recorded at point of sale.
- Trade areas differ for both retail and wholesale sources from political (much less Bay de Noc) boundaries.
- Much of the product is consumed by tourists or seasonal residents.
- Recording of sales is voluntary.

For what they may be worth, the Michigan Energy Administration offers the following 1977 comparative statistics:

1976-1977 Gasoline Consumption
(in 1,000 gallons)

County	1976	1977	% Change
Alger	6,723	5,845	-13.1
Delta	19,860	24,736	+25.2
Dickinson	13,795	13,568	-1.7
Marquette	40,586	46,384	+14.3
Menominee	14,433	13,777	-4.5
Schoolcraft	5,750	4,312	-25.0

Generally, data on sales, consumption, and end use of diesel and bottle gas around the bay has not been attempted. Estimate and conclusions regarding potential by long-term residents and businessmen are probably the most useful to the study. Conclusions reached in the recently adopted Regional Energy Plan regarding Delta County as a whole:

- The distributors in Delta County receive nearly all motor fuels by ship or barge and deliver to retailers by truck.
- Approximately 86% of total gasoline consumption in the county is for transportation, 13% for residential/commercial uses in recreation, construction, and agriculture, with the remaining 1% used by industry.
- Diesel oil consumption is reported to have a slightly higher residential/ commercial use at about 16%.

An assumption that may be made for purposes of the Little Bay de Noc study is that demand for these products will remain and grow roughly commensurate with overall growth and that the supply will continue to predominantly come through port facilities of the bay.

Coal

Army Corps of Engineers 1977 statistics on Little Bay de Noc indicates the 154,722 tons of coal were shipped in the bay that year. Principal users were the electric generating facilities. The Mead Expansion can be expected to add to this total, as would any new industrial development. Coal shipments and availability may thus be expected to continue to grow and will continue to be delivered through present port facilities.

Alternate/Wood Energy Potential

Wood has continued to be a major residential fuel in the county. In the past four years it has increased in use considerably. Wood's commercial and industrial use as a fuel has been more limited. However, Mead paper has begun to use its residual bark and fine materials as a boiler fuel.

In the future, wood use as a fuel is expected to increase. A major portion of Mead's proposed expansion is a reboiling to use a wood-coal mix as the firm's primary fuel. Other smaller firms are also considering various types of wood fired boilers and furnaces.

The sources of wood fuel vary but are considerable. Both the national and state forests are allowing cutting in certain areas as a process of thinning stands. Tops left from pulp and logging operations are also available.

Private land owners are making available individual trees as a way of clearing undesireable species or deceased or dead trees.

A major development has been the purchases of the "40's" by local individuals as a method of having a guaranteed wood supply.

THREE: GOALS AND POLICIES

The Little Bay de Noc Management Program is prepared for adoption as part of the Delta County Comprehensive Plan. As such, it may be seen as a study indicating objectives and projects for carrying out already adopted goals and policies of the County Comprehensive Plan as well as indicating new goals and policies that require future adoption. The following are suggested additions to the Goals, Policies, and Objectives of the County Comprehensive Plan.

1. Under the Transportation Goal stated:

   "Improve all modes and arteries of transportation in a balanced relationship to each other and as integral parts of a regional and statewide transportation system."

   The objective should be added:

   Establish a Port Authority to coordinate the development and provide for the operation of new port facilities.

2. Under the Natural Features goal stated:

   "Preserve and enhance Delta County's natural environment."

   The objective should be added:

   Coordinate the public land use management for Little Bay de Noc in such a fashion that;

   a. Utilizes the Delta County Planning Commission as the central coordinating body.
   b. Involves all units of government along the bay.
   c. Leads to coordinated and rational regulation of growth and land use that protects property values and public uses and resources of the bay.

All other recommendations of the study are specific projects for implementing the more general goals and policies of the adopted County Comprehensive Plan.

FOUR: PROGRAM OBJECTIVES

DEVELOPMENT OF A PORT AUTHORITY

After review of the alternatives, including utilization of the County Economic Development Corporation or the formation of a separate authority under the Urban Cooperation Act, the Technical Advisory Committee chose to recommend the formation of a new Port Authority. The Port Authority would involve both cities and the county under this recommendation (the legislation does not provide for direct township involvement) and would operate as a Harbor Commission until the Articles of Incorporation for the Port Authority are state approved. The Harbor Commission would have a number of appointees and an organization that could easily transfer to a Port Authority once the Articles are approved. Other recommendations include potential use of the site just south of the Reiss Coal Dock and the review of bulk cargo as most promising initially.

Recently, Delta County received word that its application to do an engineering study of port expansion had been approved and would be funded by the Michigan Department of Transportation. It is critical that full advantage be taken of this opportunity to continue work toward new port facilities. The best utilization of the funds and the engineering consultants that would be hired with those funds would involve a local group that worked exclusively on the project so as to gain local expertise that represents different units of government so as to gain broad local support. It is suggested that the group to directly overview the study and to work with the engineers be the new Harbor Commission/ Port Authority. It is recommended that the Harbor Commission/Port Authority have the following representative membership:

2 members appointed by the City of Escanaba
1 member appointed by the City of Gladstone
3 members appointed by Delta County
1 member appointed by the Governor

The county should appoint members who would represent the wishes or desires of the townships in the bay area.

CAPITAL IMPROVEMENTS PROGRAM

Introduction

Capital improvement projects are major projects that require the expenditure of funds above and beyond those of operating expenses. There are two broad categories of capital projects: a) replacement items, and b) new projects or purchases.

Generally, most capital projects have the following common characteristics:

1. They are of large size.
2. They are of fixed nature.
3. They are of long life (10 to 30 years).
4. They involve expenditures of a non-recurring nature.
5. They provide governmental facilities for public service.
6. They add substantially to the value of the fixed assets of the governments.

Some specific examples of capital improvement projects are:

civic center	relocation of people
boat launches	annex to a public building
harbor facilities	swimming pool
park	architect and engineer fees
playground	demolition of buildings

The Capital Improvements Program is the development of a proposed schedule of public physical improvements over a certain period of time. The capital program itself is a multi-year list of proposed projects based on a series of priorities, according to the need, desire, and importance of such improvements, as well as the communities' present and anticipated financial status.

There are many benefits of a Capital Improvement Program, including:

1. Attention is focused on the goals, policies, and objectives in the Delta County Comprehensive Plan as amended by the Little Bay de Noc Management Study in setting priorities for the projects. The plan recognizes the needs of the area, and projects will be focused on those needs.

2. Optimum use is made of the scarce taxpayer's dollars for capital projects. Advance planning helps avoid costly mistakes. Completed projects will be less likely to be torn up in the process of constructing new projects.

3. Greater cooperation and coordination will be possible among the units of government and the state in the bay area. Possible conflict or overlap in construction may be discovered and corrected. Work should become more effectively scheduled. A project the state may be planning could be combined with a project a township is thinking about.

4. Opportunities for participation in federal or state grant programs will be enhanced because there will be a ready list of long-term improvements ready to be funded. Funding agencies require projects to be prioritized prior to submission for grants.

The projects in this Capital Improvements Program are consistent with and help to implement the goals, policies, and objectives of the Delta County Comprehensive Plan.

The Projects

The following projects are being recommended and prioritized by the Little Bay de Noc Technical Advisory Committee. Possible funding sources are indicated for each project.

The projects listed below include three functional areas: Recreation, Environment, and Transportation. The Advisory Committee decided to concern themselves with projects that would have an impact upon the waters of Little Bay de Noc.

The projects in each functional area have been grouped into three categories: High, Medium, and Low Priority. Projects classified as High Priority are of extreme importance to the area and should be undertaken as soon as they can be funded. Projects designated as Medium Priority are needed but should be implemented only after the High Priority projects have been given consideration. Those designated as Low Priority are desirable but may be postponed.

Recreation

High Priority Projects	Source of Funding
1. Small boat launch facility, City of Escanaba Marina	DNR/Local
2. Major Maintenance, City of Escanaba Marina	Local
3. Beach Nourishment, City of Escanaba Municipal Beach	Corp/Local
4. Passive Recreation Area-Sand Island, City of Escanaba	DNR/Local
5. Improvements to Twin Springs/Maywood Park	Forest Service
6. Public Access Site at either Martin Bay or "Farmers Dock" Location, Bay de Noc Township	DNR
7. Improvements to Fuller Park, Ford River Township	LAWCON/Local
a) Stabilize Riverbank	
b) Pit Toilets	
c) Develop Day-Use/Parking west of M-35 (or) Stabilize Riverbank and Stairway Access	

Medium Priority Projects	
1. Public Access Site at Mouth of Escanaba River, Wells Township	DNR
2. Improvements to Marina, City of Gladstone	LAWCON/Local

Low Priority Projects	
1. Major Marina Construction, City of Escanaba	DNR/Local
2. Neighborhood Park-Dock Area (North), City of Escanaba	DNR/Local
3. Improvements to Fuller Park, Ford River Township	LAWCON/Local
a) Brushing and Tree Thinning	
b) Road Improvements and/or Relocation	
c) Signing	

		Source of Funding
d)	Primitive Campsites	
e)	Fire Rings	
f)	Picnic Tables and Grills	
g)	Increased Maintenance and Trash Recepticals	
h)	Beach Cleanup	
i)	Pedestrian Walkway	
j)	Play Equipment	
k)	Access Control	
l)	Limited Camping/Day-Use West of M-35	
m)	Possible Ball Field Development	

Environment

High Priority Projects

1.	Wastewater system for Community of Rapid River	EPA/DNR/FmHA
2.	Water Plant Standby Power, City of Escanaba	HUD/Local
3.	Wastewater System Improvements, City of Escanaba	Undetermined
4.	North Bluff Water Storage Tank, City of Gladstone	EDA/FmHA/UGL/Local
5.	Standby Generator for Water and Wastewater Plants, City of Gladstone	FmHA
6.	2" and 4" Waterlines	FmHA

Medium Priority Projects

1.	New Water Intake System, City of Escanaba	HUD/Local
2.	Wash Water Reclaim and Sludge Disposal for Water Treatment Plant	Undetermined
3.	Wastewater System Improvements, City of Gladstone	Undetermined
4.	10" and 12" Water Mains - Minneapolis Street Extension, City of Gladstone	FmHA
5.	Alternate Intake Line	FmHA/Local

Low Priority Projects

1.	Sewer Extension to McGillis & Gibbs Property	EDA

Transportation

High Priority Projects

1.	Improvements to County Road 513, Bay de Noc & Ensign Townships	MTF

Coordination

The general coordination of the Capital Improvements Program should rest with the Delta County Planning Commission. Though the projects may be located in one township, persons in adjoining communities will benefit from the project. The Delta County Planning Commission has the jurisdiction, representation, and authority to bring the various local governments, state or federal agencies, and local interests together to implement these combined solutions to local needs.

Abbreviations

DNR	Department of Natural Resources
Corp	Army Corps of Engineers
LAWCON	Land, Air, Water Conservation Fund
EPA	Environmental Protection Act
FmHA	Farmers Home Administration
HUD	Department of Housing and Urban Development
MTF	Motor Transportation Fund

MANAGEMENT/REGULATORY RECOMMENDATIONS

The earlier sections in this report have detailed the needs for recreational needs, habitat protection, and regulatory coordination. The recommendations to the state or federal government regarding recreational development on their public land have been included within the Capital Improvements Program. A map depicting the areas most in need of protection to protect critical fish habitat has been completed as part of this study. It is recommended that these now be taken into consideration in the review of local regulations.

The continuing implementation of this report should remain the responsibility of the Delta County Planning Commission. State statute charges the Commission with the responsibility of coordinating planning efforts in the county. The Commission should meet this responsibility through four ongoing activities.

First, the local land use regulations in the bay area should be examined for their impact on the bay, especially in light of this study.

Secondly, changes should be recommended to local units for these regulations. These changes should be the product of the revised policies of the County Comprehensive Plan, the soils map, the bay atlas, the fish habitat map, the historic areas map, and all other information developed in this report and the Comprehensive Plan. These changes should improve the efforts of local units of government in managing the Little Bay de Noc area. They should bring the local units of government together to recognize the interdependence of their actions on the bay and the need to establish some degree of conformity in their management.

Thirdly, the mechanism for County Planning Commission review of Little Bay de Noc Management should be improved. The Commission should be continually informed of public management actions around the bay. Those actions should be reviewed for their impact on the bay and the appropriate comments made.

Finally, the Delta County Planning Commission should provide the leadership in the implementation of a "one stop" permit process. Such a process should simplify the problems caused by multiple permits as well as aid in the Planning Commission's coordinating role. The exact order and identification of necessary permits and forms is set out in a publication developed by the CUPPAD Regional Commission entitled: "Waterfront Development Guide."